IMPLEMENTATION OF MEDICARE CAHPS FEE FOR SERVICE SURVEY

FINAL REPORT FOR YEAR 1

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October 29, 2001

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Executive Summary

This report summarizes the methodology and findings of the 2000 Medicare Consumer Assessment of Health Plan Surveys (CAHPS) Fee-for-Service (MFFS) Survey conducted for the Centers for Medicare & Medicaid Services (CMS) (formerly Health Care Finance Administration (HCFA)) by RTI with the assistance of RAND, NCS Pearson, and Discovery Research Group (DRG). The work was performed under subcontract to the Center for Health Systems Research and Analysis at the University of Wisconsin-Madison under UW's contract with CMS/HCFA. More detailed information on many of the topics presented in this report are available in the individual project reports referenced in **Chapter 9** of this report.

Questionnaire Development

The 2000 MFFS Survey used questions based on the CAHPS questionnaire for adult, privately-insured populations developed as part of the CAHPS development project sponsored by the Agency for Healthcare Research and Quality (AHRQ). A field test was conducted prior to the survey to test field procedures and to evaluate the psychometric performance of standard CAHPS questions. Data collection for the field test was conducted between August and December of 1998 on a sample of Medicare fee-for-service (FFS) beneficiaries.

Field test participants received one of two randomly administered versions of the survey instrument: The majority (n=1971) were asked to report on experiences during the past 6 months, while the rest (n=381) were asked to report on experiences during the past 12 months or without a specified recall period. In addition, some experimental phrasings of the CAHPS core items and new items were tested. Although similar response patterns were obtained for the CAHPS report and rating items for both versions of the instrument, cognitive testing prior to the field test revealed that a 12-month recall period could impose a greater cognitive and response burden for Medicare beneficiaries. These findings, in combination with a lower response rate among persons randomized to the 12-month or unspecified recall period, led to the recommendation of a 6-month recall period for health care experiences for the 2000 MFFS Survey.

Based on the field test, the wording of some CAHPS questions was slightly revised to make them more applicable to the Medicare population. In addition, some questions in the Medicare CAHPS Managed Care (MMC) Survey questionnaire were excluded from the MFFS

Survey questionnaire, and vice versa, depending on the analysis needs of the project prior to the national implementation of these surveys. Subsequent changes made to the CAHPS questionnaire for the 2001 MFFS Survey are presented in **Chapter 2** of this report.

Sample Selection and Weighting

The 2000 MFFS selected a sample of 167,993 from a sampling frame constructed from the August, 2000 version of CMS/HCFA's Enrollment Database (EDB). The frame comprised 30.1 million persons enrolled in Medicare fee-for-service for at least the prior 6 months and who resided in the U.S. or Puerto Rico. A total of 280 geographical units (geounits) were constructed (275 in the U.S. and 5 in Puerto Rico) to allow CAHPS outcomes to be compared both within the MFFS subpopulation and between the MFFS and MMC subpopulations for small, meaningful areas.

The goal was to obtain a minimum of 300 responses in each sampling unit so that ratings and composites can be calculated. This resulted in the need for beneficiaries in rural counties and less populous states to be sampled at higher rates than beneficiaries in urban counties and populous states. Therefore, an initial sampling weight was assigned to each selected beneficiary as the inverse of the selection probability, reflecting the differential selection rates that were used to select beneficiaries from each geographic area.

The response rates for the MFFS Survey varied considerably with respect to urbanicity (rural counties higher than urban), race (Whites higher than other races), age (younger beneficiaries higher than older), dual Medicare/Medicaid eligibility, and region of the country (Midwest higher than others). As a result, the respondent distribution is composed of too many Whites, too few dual eligibles, and too many beneficiaries from the Midwest when compared to the original sample distribution. To reduce the potential biasing effects of differential nonresponse, the initial sampling weights of respondents were post-stratified to 338 separate counts of the total number of Medicare FFS beneficiaries obtained from the October 22, 2000 version of the EDB. The counts included totals for each of the geographic areas in the U.S. and Puerto Rico as well as totals formed by the intersection of the age, gender, race, and dual Medicare/Medicaid eligibility factors. Details of the sample selection and weighting activities are presented in **Chapter 3**.

Data Collection

The primary mode of data collection for the MFFS Survey was a self-administered mail survey. Respondents were given the option to complete the survey by telephone to facilitate inclusion of the most possible sample members—for example, sample members with vision, reading, or other impairments that might otherwise preclude their participation. A Spanish-language version of the questionnaire was also offered. We followed up with nonrespondents to the mail survey for whom we had a telephone number by telephone (in English and Spanish), and with others by overnight mail.

The data collection period for the MFFS Survey began on October 9, 2000, with the mail-out of the prenotification letter and ended on February 1, 2001, with the close of the telephone follow-up. The overall response rate among all eligible beneficiaries was 63.9 percent. The rates varied somewhat among the geographic areas from which randomized subsamples were drawn; however, response in each area was sufficient to provide measures of CAHPS composites and ratings for all geographic areas in the U.S. and Puerto Rico.

The data collection effort achieved a response rate of 61.6 percent among all sample members (including ineligibles) and a response rate among eligible sample members of 63.9 percent. The following table provides a summary of the data collection results by wave.

	First Mailing	Second Mailing	Third Mailing	Inbound Phone	Outbound Phone	Total Activity
Initial Cases	167,993	124,503	7,773	2,191	48,471	167,993
Completed Cases	66,137	23,788	1,168	1,232	11,226	103,551
Response Rate	39.4%	14.2%	0.7%	0.7%	6.7%	61.6%

Notable among these results was the lack of telephone numbers in CMS/HCFA administrative files. Despite a concerted tracing effort, telephone matching yielded current numbers for only about half of the nonrespondents to the mail portion of the MFFS Survey. One reason for this may have been that 25 percent of the sample were 80 years old or older and another 14 percent were identified as "dual-eligible." The elderly and persons with low incomes can be very difficult to find because they often do not have telephones or credit histories to trace. As a result, tracing methods that match names to public records and search credit bureau

information are often not very successful. Details of the data collection activities are presented in **Chapter 4**.

Case Mix Adjustments

The two applications of Case-Mix Adjustment (CMA) to the 2000 MFFS Survey (within-MFFS comparisons and MFFS-versus-MMC comparisons) suggested two distinct, but similar, CMA models. The case-mix adjusters currently employed in MMC CMA (age, education, self-rated health status, and proxy respondent status) constituted an effective case-mix model for both comparison purposes. An indicator of dual eligibility further enriched the within-MFFS model. A self-rated mental health item demonstrated the potential to improve both models in the future.

The 2000 MFFS Study found that the assumptions behind CMA were satisfied or could be accommodated with simple adjustments. Furthermore, the MFFS CMA models appeared to be suitable presenting results in a variety of forms and at a variety of levels of aggregation.

While the direction of CMA coefficients was similar for MFFS and MMC, the magnitudes of the effects sometimes differed. In particular, the well-established tendency of healthier beneficiaries to rate their care more positively or to report better health care experiences was considerably stronger in MMC than in MFFS. In other words, personal satisfaction with health care was much more sensitive to health status in MMC than in MFFS. Because of this difference and the generally poorer health status of MFFS beneficiaries (even excluding the dually eligible), CMA tended to make small adjustments in favor of MFFS relative to MMC.

The existence of strong and different case-mix effects for health status between MMC and MFFS suggests that we should consider stratified reports by beneficiary health status. In fact, the Subgroup Analysis Report demonstrates that a "cross-over" occurs in many instances: Less healthy beneficiaries are more satisfied with MFFS than with MMC, whereas healthier beneficiaries are more satisfied with MMC than MFFS. Details of the MFFS case-mix adjustment activities are presented in **Chapter 5.**

Analysis of Geographic Units

The results of the geounits analyses, which are consistent across the various procedures used, indicate that the vast majority of variability in the CAHPS outcomes is at the individual level. For higher levels of geographical aggregation, geounits tend to look alike within a

particular state with respect to responses on the CAHPS measures. Those geographic differences present are attributable to differences in the composition of beneficiaries.

While the geounits do not contribute in any statistically meaningful way for purposes of analysis, they are essential for the creation of comparisons to MMC. Because the criteria for aggregating counties imposed many constraints, there are few alternatives for the creation of geounits that will allow comparison to MMC. The current geounits perform well in that respect and should be modified only to conform to the changing MMC landscape. Details of the analysis of geographical units are presented in **Chapter 6**.

Subgroup Analyses

The 2000 MFFS Survey data were analyzed to gain an understanding of the differences in health services experience and satisfaction among Medicare beneficiaries, according to geographic levels, socio-demographics, plan options, and health status. The MFFS population is quite heterogeneous in terms of demographic characteristics, region of residence, supplemental insurance (employer-based, private, or Medicaid), and health-related characteristics. These subgroups may have vastly different experiences with and expectations of the health care system and, thus, may perceive the quality of and access to services differently.

The data generated by the 2000 MFFS Survey should be usable for quality improvement, accountability, and beneficiary information. These goals required that data be reported on a number of levels of aggregation, including geographic sampling units, state, region, and nation. In markets where there was sufficient MMC penetration to offer choices to beneficiaries, the aggregation enabled MFFS and MMC comparisons.

Ratings and composites were constructed using the CAHPS 3.0 macros, case-mix adjusted and weighted, for the following measures:

- Rate Personal Doctor (Q 7)
- Rate Specialist (Q 11)
- Rate Health Care[*] (Q 30)
- Rate Medicare* (Q 46)
- Needed Care composite* (Q 21, 22, 4, 9)
- Good Communication composite* (Q 26, 27, 28, 29)

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[*] Indicates composites or ratings featured on the Medicare Compare website (http://www.medicare.gov/mphCompare/home.asp).

- Care Quickly composite* (Q 14, 16, 18, 23)
- Respectful Treatment composite (Q 24, 25)
- Medicare Customer Service composite (Q 41, 43, 45).

Notable findings from these analyses include the following:

- Across geounits, states, and CMS/HCFA regions, a consistent pattern emerged among MFFS beneficiaries with the Needed Care composite having the highest percentage of most positive responses and Rate Medicare having the lowest percentage of most positive responses.

- Ratings and composites vary by subgroups of MFFS beneficiaries; differences in ratings and composites were found by insurance status (dually eligible, with versus without insurance in addition to Medicare), self-reported health status, race, and age. However, these differences were not always consistent.

- With the exception of Medicare Customer Service, no more than 20 percent of MFFS beneficiaries responded negatively to all CAHPS performance indicators and ratings.

- MFFS beneficiaries who are younger, more educated, in poorer health, and who do not have a personal doctor are generally less satisfied with MFFS than their counterparts.

- On a national level, neither MFFS nor MMC beneficiaries consistently provided more positive responses across all indicators.

- Beneficiaries in excellent/very good health perceive their plans and the care they receive differently than those in fair/poor health. Generally, a larger proportion of beneficiaries in fair/poor health give MFFS higher ratings while a larger proportion of those who rate their health as excellent/very good give MMC higher ratings.

Conclusions of the Subgroup Analysis

Findings from the geographic-level analyses indicate that notable differences exist among MFFS beneficiaries across all geographic aggregation options for Rate Medicare, Rate Personal Doctor, Rate Specialist, and the Medicare Customer Service composite. Also, when beneficiaries' responses to ratings and composites are aggregated to state, region, and national levels, the differences across the geographic levels are still present but mitigated.

Findings from the individual-level analyses suggest that satisfaction and experience with MFFS are affected by socio-demographic characteristics, health status, and insurance type. Younger beneficiaries are less satisfied than older beneficiaries; beneficiaries with lower levels

of education rate Medicare higher than the more highly educated; and males rate Medicare lower than females. Healthier beneficiaries were more satisfied and rated Medicare higher than less healthy beneficiaries. Beneficiaries with a personal doctor were more satisfied than those without a personal doctor. Beneficiaries living in metropolitan areas were less satisfied and rated Medicare lower than those living in rural areas. MMC penetration rates were also associated with satisfaction and ratings, with those living in areas with higher MMC penetration reporting higher levels of satisfaction and rating Medicare higher than those living in areas with less than 25 percent managed care penetration.

The comparative analysis of the five composites and ratings, along with the Flu Shot indicator, illustrate statistically significant differences ($p < 0.05$) in the satisfaction and experience reported by beneficiaries in MFFS and MMC. In general, a higher percentage of beneficiaries in MFFS (compared to MMC enrollees) reported "Not a Problem" for the Needed Care composite and reported "10" for Rate Medicare. On the other hand, a higher percentage of beneficiaries in MMC (compared to those in MFFS) reported "Always" for the Good Communication composite, reported "Yes" for the Flu Shot indicator, and assigned a "10" for Rate Health Care. For one composite, Care Quickly, neither MFFS nor MMC was clearly better or worse. These findings suggest that MFFS beneficiaries are more satisfied with Medicare and health services access in general, while MMC beneficiaries are more satisfied with their health provider interaction and may receive more preventive measures.

Findings from the analysis comparing MFFS with MMC by health status suggest that beneficiaries who are in fair/poor health and those in excellent/very good health perceive their plans differently. In general, beneficiaries in fair/poor health reported better experiences and higher levels of satisfaction with MFFS than with MMC. On the other hand, beneficiaries in excellent/very good health rated MMC higher than MFFS most of the time. These data can be used to examine state-level trends and initiatives that can influence beneficiaries' experience with and perceptions of their choice of health plan. Details of the MFFS subgroup analysis are presented in **Chapter 7**.

Encouraging PROs to Use CAHPS Data for Quality Improvement

The original goal of this task was to gain a better understanding of how CAHPS was viewed and understood by the Peer Review Organizations (PROs), and then to develop a model

for enabling them to use CAHPS data in their Quality Improvement (QI) projects. By the time of the November 30, 2000 Technical Expert Panel (TEP) meeting held in Baltimore, TEP members had been briefed at the previous year's American Health Quality Association annual meeting on the results of focus groups on a very similar topic conducted by the Picker Institute with PRO staff. This focus group report suggested that PRO staff did not have much knowledge of or experience with CAHPS data, and that there was no great interest in becoming more familiar with the data in the context of QI. In the discussion surrounding our task plan presentation at the TEP meeting, two new, more promising possible directions emerged. One was to see how private health plans are using CAHPS data for QI purposes and to assess parallels for PROs. The second was to make an effort to tie CAHPS data in some way to clinical or preventive care.

To identify private health plans that were using CAHPS data for QI purposes, we reviewed the 1999 project summaries of the 39 organizations with a summary posted on the CAHPS Users Group website (http://www.cahps-sun.org/). Private health plans generally indicated that CAHPS was performed in order to obtain accreditation and for promotional reasons. However, three health plans did mention using CAHPS for QI purposes. We contacted and interviewed representatives of those three health plans, and we found that CAHPS data were being used by health plans along with other information to identify areas needing improvement *within* the health plans. Most typically, health plan attention was directed at improving their overall health plan ratings in order to raise their accreditation score. Also, we found that other surveys were often conducted with "CAHPS-like" items in order to get closer to identifying operational problems. It was felt that the CAHPS survey identified problem areas but was "too high level" to actually identify the roots of the problems.

We also examined whether variations in two of the CAHPS service quality measures in the 2000 Medicare Fee-for-Service CAHPS Survey were related to variations in health behavior. In particular, we explored the extent to which the CAHPS measures of the communication skills of primary care physicians and the helpfulness and respectfulness of their office staff are associated with better compliance in the use of screening mammography. This analysis was done at the level of the geographic areas (the 275 counties and county aggregates) used to sample for the Medicare CAHPS. The rates of mammography use for the same 275 geounits were obtained from a report prepared by Health Economics Research (HER) entitled *Performance Measurement in Medicare Fee-for-Service: Biennial Mammography Screening Rates for 1998-*

1999. In addition to these variables, a number of others could confound the analysis of the relationship between service quality and mammography use using data obtained from the CAHPS and other sources.

We analyzed the relationships between service quality and mammography use employing the SAS multiple linear regression procedure with a dichotomous value for each level of categorical predictor variables. We tested two models using slightly differently calculated CAHPS quality measures of physician communication and staff helpfulness. In the first model (to predict the rate of screening mammography use among 52- to 69-year-old Medicare beneficiaries in the 275 geographic areas), the overall model analysis of variance was highly significant (F-Value = 8.40, DF 17/256, $p<0.0001$), with an adjusted $R^2 = 0.31$. This model accounted for just less than one-third of the variance in mammography use rates. The second model overall analysis of variance was highly significant as well (F-Value = 9.23, DF 17/257, $p<0.0001$), with an adjusted $R^2 = 0.34$. The second model accounted for just over one-third of the variance in the geographic area rates of mammography use.

We also repeated the estimation of both models on two population subgroups for which we had mammography use rates (all white women, and all women aged 65 to 69). The subgroup models were also all significant and the R^2s ranged from 0.24 to 0.38. Results were largely consistent with the two models for the overall group of women aged 52 to 69.

The models we have estimated successfully explain considerable variance in the rates of mammography use at the county or county group level at which the Medicare Fee-for-Service CAHPS data were collected. However, census division was the most consistently significant variable and likely accounts for most of the differences in rates that the model explains. Only one of the two CAHPS service quality measures rates—physician communication—was associated with the mammography rate, but it was only significant in half of the models.

Our analyses conducted thus far are not conclusive with respect to the association of CAHPS service quality measures. In the future, we propose to obtain individual-level preventive service use outcomes to analyze with individual-level CAHPS scores rather than the geographic area or ecological measures we examined in this analysis.

Among the preventive health behaviors we will focus on next are some included in the CAHPS survey (receipt of a flu shot, pneumonia immunization, and smoking cessation

counseling for smokers), and others extracted from Medicare claims data (mammography screening, treatment of depression, and diabetes care). Because person-level analysis may capture relationships between individual beneficiaries and their providers, the objective of this analysis will be to determine whether selected dimensions of service quality collected in the CAHPS survey are associated with the use and receipt of primary and secondary preventive services at the individual (person) level. To the extent that the selected service quality dimensions are associated with the use of preventive services at the person level, we will have established an empirical basis for recommending to policymakers the more widespread use of CAHPS for health care quality improvement purposes. More details of the MFFS quality improvement activities are presented in **Chapter 8**.

1. Introduction

The Centers for Medicare & Medicaid Services (CMS/HCFA) currently conducts three Consumer Assessment of Health Plan Surveys (CAHPS) of the Medicare population. These include

1) The Medicare CAHPS Fee-for-Service (MFFS) Survey: A survey of Medicare beneficiaries who are enrolled in Original Medicare, also referred to as fee-for-service (FFS) Medicare;

2) The Medicare CAHPS Managed Care (MMC) Survey: A survey of Medicare beneficiaries currently enrolled in a Medicare managed care plan; and

3) The Medicare CAHPS Disenrollment Assessment Survey: A survey of Medicare beneficiaries who left or disenrolled from a Medicare managed care plan.

The surveys collect information on an annual basis to fulfill a requirement of Congress (under the Balanced Budget Act of 1997) to provide information to Medicare beneficiaries on the quality of health services provided through the Original Medicare Plan and to compare this information to similar information collected from beneficiaries enrolled in Medicare managed care health plans.

The 2000 MMC Survey was the fourth implementation of that survey. The CAHPS Medicare Disenrollment and Fee-for-Service Surveys were conducted for the first time in Fall 2000. The data from the MMC and Disenrollment Assessment surveys were combined and analyzed together so that the results reflect both those who stayed in the plan and those who left. In the Fall of 2000, CMS/HCFA funded the national implementation of the MFFS Survey, thereby providing the data to construct CAHPS ratings and composites for both the MFFS and MMC populations.

Comparative information from all three surveys is reported to Medicare beneficiaries on the Medicare Health Plan Compare web site (www.medicare.gov/mphCompare/home.asp) so they can make more informed decisions when choosing a Medicare health plan.

2. Questionnaire Development

The questions used in the 2000 MFFS Survey were based on the CAHPS questionnaire for adult, privately-insured populations developed as part of the CAHPS development project (CAHPS 1999), which was sponsored by the Agency for Healthcare Research and Quality (AHRQ). A field test was conducted prior to the survey to test field procedures and to evaluate the psychometric performance of standard CAHPS questions (Carman, Keller, & Hays, 1999). Data collection for the field test was conducted between August and December of 1998 on a sample of Medicare FFS beneficiaries.

Two versions of the survey instrument were randomly administered to field test participants: The majority (n=1971) were asked to report on experiences during the past 6 months, while the others (n=381) were asked to report on experiences during the past 12 months or without a specified recall period. In addition, some experimental phrasings of the CAHPS core items and new items were tested. Although similar response patterns were obtained for the CAHPS report and rating items for both versions of the instrument, cognitive testing prior to the field test revealed that a 12-month recall period could impose a greater cognitive and response burden for Medicare beneficiaries. These findings, in combination with a lower response rate among persons randomized to the 12-month or unspecified recall period, led to the recommendation of a 6-month recall period for health care experiences for the 2000 MFFS Survey.

Because one of the purposes of the three Medicare CAHPS projects is to provide comparative information about Medicare managed care plans and Original Medicare, it is important that the three questionnaires be as similar as possible in order to make these comparisons. The RTI MFFS project staff collaborated extensively with CMS/HCFA and the managed care enrollee and disenrollee CAHPS teams in the Spring of 2001 to address questionnaire differences, and to suggest strategies for reconciling the differences for future implementation of these surveys. Some of the recommended changes were based on results of recent cognitive testing of specific questions in the core CAHPS questionnaire; other recommended changes were precipitated by the need for more comparability among the questionnaires to support analysis of data for consumer reporting.

The following is a list of changes that were made to the 2001 MFFS questionnaire based on extensive discussions with CMS/HCFA and the other two CAHPS teams. Changes recommended to the MMC enrollee and disenrollee questionnaires will be described in the final reports that will be prepared for those two surveys.

- The first question in the 2000 survey asked the sample member to confirm that he/she is enrolled in Original Medicare. Since CMS/HCFA's records indicate that all sample members are enrolled in Medicare FFS, project staff decided to eliminate this question. The question was replaced by an introduction that precedes the first question in the 2001 questionnaire, instructing sample members to answer all questions in the questionnaire as fully as possible regardless of whether they consider themselves on Medicare.

- The 2000 MFFS questionnaire contained several questions (Questions 74-78) that asked about other health insurance the sample members had; each type of insurance was addressed in a separate question. For the 2001 survey, these questions about other health insurance were consolidated into a single question, and the answer choices reflect the types of health plans described in the *2001 Medicare &You* handbook. In the 2000 questionnaire, the insurance questions appeared **after** the assessment and ratings questions and preceded the health status questions. The questionnaire about other health insurance appears as the first question in the 2001 survey questionnaire, and precedes the question asking if the sample member has prescription drug coverage.

- "Nurse practitioner" was deleted from the definition of personal doctor or nurse.

- The routing/skip instruction for most questions was changed from "Go to…" to "If no, go to …."

- The answer choices in the question that asks how long the sample member has been going to the personal doctor or nurse was changed to be consistent with those included in the managed care CAHPS questionnaire.

- The order of the questions and the types of questions included in the section entitled "Your Personal Doctor or Nurse" has been changed so that all sample members who have a personal doctor or nurse will be asked to rate him/her, regardless of whether or not they got a new personal doctor or nurse when they joined Medicare. In addition, the new order of questions in this series is such that all sample members are asked how difficult it was to find a personal doctor or nurse, regardless of whether they got a new personal doctor or nurse when they first joined the plan.

- The question about getting a new doctor when the sample member first joined Medicare was reworded: "Did you have the same personal doctor or nurse before you joined Medicare?"

- Questions to determine if the sample member has any medical conditions that seriously affect his/her ability to work or manage day-to-day activities and how much his/her doctor understands how those conditions affect the sample member were added to the "Your Personal Doctor or Nurse" section. These questions were added to make the questionnaire comparable to the managed care enrollee questionnaire.

- The answer choices provided for the question asking how many times the sample member went to a specialist or other provider for care in the last 6 months were reformatted to match the managed care enrollee questionnaire. That is, the number is shown as the answer category rather than showing the word that represents the number.

- The wording of the ratings questions was changed from "We want to know your rating of the specialist you saw……." to "How would you rate the specialist you saw…." in order to be comparable to the enrollee questionnaire.

- The order of the questions about needing special therapy and home health care or assistance was inverted to match the order in the managed care questionnaire.

- The three questions in the 2000 survey questionnaire about the sample member's experience getting new prescriptions or refills were replaced with two questions that simply ask how often he/she got prescription medicine and whether he/she had problems getting prescription medicine.

- The questions about experience with written information from the plan and customer service were moved to appear before the questions about experience with paperwork for Medicare. This change was made to be consistent with the managed care enrollee questionnaire.

- Questions 47 and 48 in the 2000 questionnaire (which asked how often the sample member received good quality medical care and the very best medical care possible) were deleted, since they did not correlate with the ratings questions as project staff had expected.

- The question asking the sample member to rate his/her overall mental health was moved to appear *before* the SF12 questions. This change was made because project staff were concerned that the answer to this question might be affected if the question followed the SF12 questions.

- Question 65 in the 2000 questionnaire (which asked the sample member to compare his/her health to one year ago) was also moved to precede the SF12 questions and follow the overall rating of health question.

- Three new questions were added to the Health Status Section in the 2001 questionnaire to determine if female sample members have received a mammogram and pap smear in the last 12 months, and to determine if male sample members got a prostate screening in the last 12 months. In addition, a question was added to determine how often the sample member walked or exercised for more than 20 minutes at a time during the past 4 months.

- The question that asked the sample member to provide the zip code of his/her residence (Question 93) was deleted.

The 2000 MFFS Survey questionnaire is shown in **Appendix A**.

3. Sample Selection and Weighting

3.1 Sample Selection

Geographic stratification was used to vary the sampling rates of beneficiaries selected for the MFFS in order to achieve the design goals of the study (Elliott, Solomon, Suttorp, & Hays, 2000). A total of 280 geographical units (geounits) were constructed (275 in the U.S. and 5 in Puerto Rico) and allocated a sample size of 600 beneficiaries each to achieve the recommended CAHPS sample size of 300 respondents per reporting unit (assuming a 50 percent response rate). Seven states (Alaska, Idaho, Montana, North Dakota, Rhode Island, South Dakota, and Vermont) and the District of Columbia were each assigned only one geounit, meaning that each of these states would itself be a reporting unit. Florida was allocated the most units (17), followed by New York (16), Texas (16), Pennsylvania (11), and California (11). In the 42 states with two or more geounits assigned, counties were agglomerated into geographic reporting units according to a hierarchical series of rules. The counties initially allocated the greatest number of surveys were used as the centers or "seeds" for the agglomeration, which proceeded until the unit contained a total number of surveys that was within a small tolerance of the state target. The state target was the number of surveys initially allocated to the state divided by the number of geounits allocated to the state.

The hierarchy of grouping rules for geounits was as follows. The first priority was geographic contiguity. All geounits formed except the last must be completely contiguous. In a few states, after all other geounits were formed, one noncontiguous geounit was necessary. Priority was then given to Managed Care Contract Area (MCCA) boundaries in order to facilitate comparisons with the MMC Survey. In practice, this meant that geounits entirely within MCCAs were preferred to those that contained both MCCA and non-MCCA counties. The third priority was Metropolitan Statistical Areas (MSA) boundaries. Geounits that did not split state-MSA boundaries were preferred to those that did. The final priority was HSA (Health Services Administration) boundaries. Geounits that did not split state-HSA boundaries were preferred to those that did.

In 2000, MMC plans were operating in 259 geounits in 42 states and the District of Columbia. CAHPS measures provided by MFFS Survey respondents living in these geounits

were compared to CAHPS measures provided by MMC Survey respondents. The results of the MFFS and MMC comparisons are presented in **Chapter 7.7**.

It should be noted that more than one set of geounits is possible for most states using the above hierarchy of aggregation rules. In fact, the MFFS sample design permits the re-aggregation of county-level data to support other types of reporting as long as 300 responses are in each of the newly formed units. A panel discussion of methods for linking MFFS data with other health services research data bases at the state and county levels will be presented at the American Health Quality Association (AHQA) 2002 Technical Conference in February, 2002.

In general, beneficiaries in rural counties and less populous states were sampled at higher rates than beneficiaries in urban counties and populous states. The median county-level sampling rate was one selection per 190 FFS beneficiaries, with beneficiaries in 50 percent of the counties receiving between one selection per 163 beneficiaries and one selection per 209 beneficiaries. The highest county-level sampling rate was one selection per 28 beneficiaries, while the lowest rate was one selection per 957 beneficiaries. At the state level, 50 percent of the states were sampled at a rate between one selection per 173 beneficiaries and one selection per 200 beneficiaries. Alaska was sampled at the highest state-level rate (one selection per 58 beneficiaries), and Illinois was sampled at the lowest state-level rate (one selection per 276 beneficiaries). As a result, the sample distribution produced by the stratified selection of FFS beneficiaries is not proportional to the population distribution from which the sample was selected.

The sample of 167,993 beneficiaries selected for the 2000 MFFS was drawn from a sampling frame constructed from the August, 2000 version of the CMS/HCFA Enrollment Database (EDB). The frame comprised 30.1 million persons who were enrolled in Medicare FFS for at least the prior 6 months and who resided in the U.S. or Puerto Rico. The frame included the following beneficiaries who were determined to be ineligible for the survey:

- Beneficiaries under the age of 18,
- Sample members who self-reported that they were not on Medicare FFS, and
- Beneficiaries who died before or during data collection.

After selecting the MFFS sample, 8 sample members were identified who were under the age of 18 and excluded from the survey. A total of 2,905 sample members who died before or during

data collection were identified by a subsequent run on the January, 2001 version of the EDB. A total of 2,950 sample members who were contacted and asked to participate in the survey self-reported that they were not on Medicare FFS.

The frame also included beneficiaries who did not speak English or Spanish, and beneficiaries who were mentally or physically incompetent and without access to a proxy. Even though these beneficiaries were systematically excluded from participation in the survey, they were classified as survey eligible to be consistent with the Medicare CAHPS Managed Care Survey. The eligibility status of the MFFS sample is shown in *Exhibit 3.1*.

Exhibit 3.1: Eligibility Status of MFFS Sample Members

	Sample Members	
Survey Eligible		
Completed Questionnaire	103,551	61.6%
Known institutionalized[1]	1,992	1.2%
Received help with survey	20,320	12.1%
Other respondent	81,239	48.4%
Refused	11,241	6.7%
Mentally/Physically Incompetent	413	0.3%
Language Barrier	883	0.5%
Other Nonrespondents		
Deliverable address and phone	22,894	13.6%
Deliverable address and no phone	20,551	12.2%
Undeliverable address and phone	269	0.2%
Undeliverable address and no phone	2,328	1.4%
Total Eligibles	**162,130**	**96.5%**
Survey Ineligible		
Respondent said not on Medicare	2,950	1.8%
Deceased	2,905	1.7%
Less than 18	8	0.0%
Total Ineligibles	**5,863**	**3.5%**
Total Sample	**167,993**	**100.0%**

[1] Currently living in a long-term care facility.

Ideally, the sampling frame would include all members of the MFFS *target population*, i.e., the entire set of MFFS eligible beneficiaries in the Medicare population. However, changes

in the composition of the Medicare FFS population during the 5 months between sample selection and the end of data collection (February 1, 2001) made complete coverage of the target population impossible. Therefore, after consultation with the CMS/HCFA Project Officer, the MFFS target population was defined to include all survey-eligible beneficiaries as of October 22, 2000. This target date was chosen for two reasons:

1)   The date corresponds to the peak of data collection, and

2)   The date is about the same amount of time after sample selection (approximately 2 months) as the target date for the Medicare CAHPS Managed Care Survey.

There were 30.5 million Medicare FFS beneficiaries on the October 22, 2000 version of the EDB who satisfied the eligibility requirements for the survey. Based on the results of the survey, it is estimated that about 2.8 percent of these would have self-reported that they were not on Medicare FFS.

3.2   Sampling Weights

Sampling weights enable design-consistent estimation of population parameters by scaling the disproportionalities between the sample and the population. For the MFFS Survey, the weights may be viewed as inflation factors that account for the number of beneficiaries in the target population that a sample member represents. The basic component of MFFS sampling weight was the selection probability specified by the sample design. Adjustments were made to compensate for potential biases attributable to differential response and coverage among sample members.

An initial sampling weight was assigned to each selected beneficiary as the inverse of the selection probability, reflecting the differential selection rates used to select beneficiaries from each state or county. For example, beneficiaries selected from the county with the highest sampling rate were assigned an initial weight of 28 compared to an initial weight of 957 for beneficiaries selected from county with the lowest sampling rate. This variability in the sampling weights will induce *design effects*[1] on the variances of the sampling estimates. Because design effects attributable to unequal weighting inflate the variances of sampling

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[1] The *design effect* is the ratio of the design-consistent variance of a population estimate divided by the variance that would be obtained from a simple random sample of the same size.

estimates, the effects of differential sampling of counties as well differential response rates among sample members should be examined during the analysis of the MFFS survey data.

As **Exhibit 3.2** shows, the response rates for the MFFS Survey varied considerably with respect to urbanicity (rural counties higher than urban), race (Whites higher than other races), age (young seniors higher than old), dual eligibility, and region (Midwest higher than others). As a result, the respondent distribution is composed of too many Whites, too few dual eligibles, and too many beneficiaries from the Midwest when compared to the original sample distribution. These differential response-rate patterns combined with differential answer patterns to the survey represent a potential for nonresponse bias.

To reduce the potential biasing effects of differential nonresponse, the initial sampling weights of respondents were post-stratified to 396 separate counts of the number of Medicare FFS beneficiaries obtained from the October 22, 2000 version of the EDB. The counts include totals for each of the 276 geographic areas in the U.S. and Puerto Rico as well as 60 totals formed by the intersection of the following demographic variables:

- Age category (5): less than 65, 65-69, 70-74, 75-79, 80 and older
- Gender (2): male, female
- Race (3): White, Black, other/unknown
- Dual Eligibility (2): yes, no.

Because beneficiaries with a representative payee were much less likely to participate in the survey than other beneficiaries, they also were included as a marginal count[2].

Notice that the 276 geographic counts "cut across" the 120 demographic counts in that each sample member belongs to both a geographic cell and a demographic cell. Therefore, a generalized exponential model (GEM) (Singh & Folsom, 2000) was used to ensure that the adjusted weights sum to all 338 counts while imposing bounds on the adjustment factors so that extreme weights could be controlled. GEM is a generalization of the well-known logit method of Deville and Sarndal (1992), and the usual raking method can be obtained as a special case.

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[2] Beneficiaries with a representative payee represented less than 2 percent of MFFS respondents. We did not cross-classify them with other beneficiaries because the small post-strata caused instabilities in the GEM model.

Exhibit 3.2: MFFS Survey Response Rates

	Subpopulation		Total Sample		Respondent Sample		Response Rate Among Eligibles[1]
Overall	USA and Puerto Rico		167,993	100.0%	103,551	100.0%	63.9%
Telephone Status	No Number Found		54,539	32.5%	29,814	28.8%	56.4%
	Number Found		113,454	67.5%	73,737	71.2%	67.5%
Gender (EDB)	Male		72,298	43.0%	45,128	43.6%	65.0%
	Female		95,695	57.0%	58,423	56.4%	63.0%
Age Group (EDB)	Under 65		22,118	13.2%	10,845	10.5%	51.3%
	65 – 69		34,290	20.4%	22,487	21.7%	67.7%
	70 – 74		37,662	22.4%	25,354	24.5%	69.1%
	75 – 79		31,880	19.0%	21,020	20.3%	67.8%
	80 and Older		42,043	25.0%	23,845	23.0%	59.5%
Race (EDB)	White		145,212	86.4%	92,557	89.4%	66.0%
	Black		14,814	8.8%	7,226	7.0%	51.0%
	Other/Unknown		7,967	4.7%	3,768	3.6%	49.2%
Dual Eligible (EDB)	Yes		23,971	14.3%	11,614	11.2%	50.5%
	No		144,022	85.7%	91,937	88.8%	66.1%
Representative Payee (EDB)	Yes		5,783	3.4%	1,981	1.9%	36.5%
	No		162,210	96.6%	101,570	98.1%	64.8%
Beale Code	0 Metro central counties with pop. 1M+		47,529	29.8%	26,608	27.0%	58.4%
	1 Metro fringe counties with pop. 1M+		6,826	4.3%	4,329	4.4%	65.9%
	2 In MSA with pop. 250k to 1M		39,358	24.7%	24,137	24.5%	63.5%
	3 In MSA with pop. less than 250k		16,544	10.4%	10,834	11.0%	67.4%
	4 Urban pop. 20k+ adjacent to MSA		8,788	5.5%	5,786	5.9%	68.1%
	5 Urban pop. 20k+ not adjacent to MSA		5,731	3.6%	3,734	3.8%	67.0%
	6 Urban pop. 2.5k - 19,999 next to MSA		16,161	10.1%	10,701	10.9%	68.4%
	7 Urban pop. 2.5k - 19,999 not next to MSA		12,612	7.9%	8,399	8.5%	68.9%
	8 Completely rural adjacent to MSA		2,416	1.5%	1,624	1.7%	69.2%
	9 Completely rural not adjacent to MSA		3,628	2.3%	2,474	2.5%	70.1%
Region	North East	New England	9,602	5.7%	5,754	5.6%	62.7%
		Middle Atlantic	22,801	13.6%	13,071	12.6%	59.7%
	South	East South Central	13,203	7.9%	8,280	8.0%	64.9%
		West South Central	17,403	10.4%	10,700	10.3%	63.8%
		South Atlantic	35,389	21.1%	21,887	21.1%	63.9%
	North Central	East North Central	27,604	16.4%	17,616	17.0%	65.9%
		West North Central	13,797	8.2%	9,402	9.1%	70.5%
	West	Pacific	16,196	9.6%	9,657	9.3%	61.9%
		Mountain	8,998	5.4%	5,866	5.7%	67.4%
	Puerto Rico		3,000	1.8%	1,318	1.3%	45.6%

[1] All sample beneficiaries were eligible except 2,905 decedents, 8 beneficiaries under 18, and 2,950 beneficiaries who self-reported that they were not on Medicare.

In addition to the 103,551 responding sample members, the post-stratification also included the 2,950 sample members who self-reported that they were not on Medicare (and therefore were not eligible for the survey). These ineligible sample members were included because they could not be identified and deleted from the sampling frame prior to data collection. As a result, the post-stratified weights of eligible respondents sum to 29.6 million or about 97.2 percent of the 30.5 million otherwise eligible beneficiaries on the October 22, 2000 version of the EDB.

Exhibit 3.3 summarizes the post-stratification adjustments that were made to the sampling weights. On average, an adjustment factor of 1.61 (29,612 / 18,350) was applied to the initial sampling weights of eligible respondents. Because of differential nonresponse, however, the adjustment factors varied substantially across the post-strata. For example, an average adjustment factor of 2.85 was applied to beneficiaries with a representative payee to compensate for the low (37 percent) response rate for this group. At the other extreme, respondents in Minnesota (which had a 70 percent response rate) only required an average adjustment of 1.42.

The overall unequal weighting effect after post-stratification was 1.31 compared to 1.18 for the initial sampling weights. This increase can be interpreted as the "price" paid (in terms of variance inflation) for ensuring that the weighted distribution of respondents reflects the distribution of the October 22, 2000 version of the EDB. Although the unequal weighting effect varied among the post-strata, the increase attributable to post-stratification did not seriously affect the effective sample sizes.

Exhibit 3.3: MFFS Sampling Weight Post-Stratification Summary[1]

	Post Stratum	Number of Respondents	Initial Sampling Weights			Post-Stratified Weights		
			Weight Sum (000s)	Unequal Weighting Effect	Effective Sample Size	Weight Sum (000s)	Unequal Weighting Effect	Effective Sample Size
Overall	U.S. and Puerto Rico	103,551	18,350	1.18	87,943	29,612	1.32	78,614
Dual Eligibility	No	91,937	16,260	1.17	78,554	25,233	1.28	71,612
	Yes	11,614	2,090	1.23	9,433	4,379	1.37	8,474
Age	Under 65	10,845	1,890	1.16	9,374	3,761	1.30	8,313
	65-69	22,487	3,950	1.17	19,223	6,313	1.30	17,240
	70-74	25,354	4,478	1.18	21,558	6,551	1.30	19,431
	75-79	21,020	3,752	1.18	17,779	5,662	1.30	16,188
	80 and Older	23,845	4,279	1.19	20,038	7,325	1.31	18,177
Race	White	92,557	16,329	1.16	79,715	25,121	1.24	74,400
	Black	7,226	1,331	1.24	5,838	2,663	1.32	5,480
	Other	3,768	690	1.43	2,638	1,828	1.55	2,425
Gender	Male	45,128	7,965	1.17	38,575	12,640	1.32	34,226
	Female	58,423	10,385	1.18	49,375	16,971	1.32	44,410
Rep. Payee	No	101,570	18,003	1.18	86,198	28,621	1.31	77,473
	Yes	1,981	347	1.13	1,749	992	1.17	1,692
CMS/ HCFA Region	1. CT, ME, MA, NH, RI, VT	5,754	940	1.17	4,905	1,552	1.29	4,474
	2. NJ, NY, PR	9,729	1,868	1.19	8,153	3,370	1.31	7,443
	3. DE, DC, MD, PA, VA, WV	11,782	1,947	1.09	10,790	3,132	1.14	10,343
	4. IL, NC, GA, SC, FL, KY, MS, TN	23,045	4,006	1.04	22,190	6,429	1.09	21,081
	5. IL, IN, MI, MN, OH, WI	19,701	3,718	1.26	15,578	5,787	1.43	13,729
	6. AR, LA, NM, OK, TX	11,455	1,947	1.13	10,113	3,147	1.24	9,243
	7. IA, KS, MO, NE	6,435	1,128	1.04	6,195	1,662	1.09	5,914
	8. CO, MT, ND, SD, UT, WY	2,439	421	1.02	2,391	609	1.07	2,289
	9. AZ, CA, HI, NV	7,949	1,550	1.52	5,213	2,724	1.85	4,308
	10. AK, ID, OR, WA	3,956	650	1.11	3,552	958	1.16	3,398

[1] Post-stratification was used to force the weight sums of MFFS respondents to agree with totals obtained from the October 22, 2000 version of the EDB (i.e., the post-stratified weight sum). The unequal weighting effect measures the amount of variance inflation above an equally weighted sample. The effective sample size is the number of respondents divided by the unequal weighting effect.

4. Data Collection

The primary mode of data collection for this survey was a self-administered mail survey. The option to complete the survey by telephone was offered to provide a way to include sample members for whom completing a written survey might not be possible—for example, sample members with vision, reading, or other impairments that might otherwise preclude their participation. The follow-up data collection effort for nonrespondents to the mail survey included a telephone follow-up of nonrespondents for whom a telephone number was available and an overnight mailing to other nonrespondents.

The data collection period for the MFFS Survey started with the mailing of the pre-notification letter on October 9, 2000 and ended with the close of the telephone follow-up on February 1, 2001. This compressed, 16-week schedule, coupled with a very large sample size of 167,993 beneficiaries, created a unique set of challenges for this data collection effort. The weekly data collection summary is shown in **Exhibit 4.1**.

4.1 Mail Survey

The data collection plan for the mail survey followed the traditional method of mailing an advance letter, followed by a survey package, followed by a thank you/reminder letter. This method is generally used in other CAHPS surveys including the MMC Survey. These initial contacts were followed by a replacement survey, which was mailed to nonrespondents about 2 weeks after the thank you/reminder letter. A final or third wave survey was sent by overnight mail to provide a "last chance" for participation to nonrespondents. The third wave mailing was sent 5 weeks after the second wave mailing to help reduce overlap in the returns.

CMS/HCFA selected a sample file that contained a random sample of institutionalized and non-institutionalized FFS beneficiaries[3]. The sample was drawn from 280 geographically distinct areas in the U.S. and Puerto Rico. Approximately 600 sample members were selected from each geographic area. The sample from Puerto Rico contained 3,000 sample members from six geographic areas. The address file was run through the National Change of Address (NCOA) database, which updates the addresses for those sample members who have moved since the

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[3] Institutionalized MFFS beneficiaries could not be identified on the EDB used for sample selection.

sample was drawn. This process yielded 3,872 updated addresses. All records that were returned with an NCOA-updated address were mailed using the updated address. The NCOA database also standardized the mailing addresses to conform to standard U.S. Postal Service formats. Addresses that conformed to standard format were pre-sorted, which allowed us to take advantage of a reduced postage rate. Addresses that did not conform to the standard format were metered and mailed first class. Addresses that were not updated through NCOA were mailed using the CMS/HCFA-provided address.

Exhibit 4.1: Weekly Data Collection Activity

Week	Date	Activity	Mail Returns	Inbound Calls	Inbound/ Outbound[1] Phone Surveys
1	10/9	Mail Pre-notification letter	0	370	58
		Toll-free line opens			
		Inbound call center opens			
		First survey mailed			
2	10/16	Thank you/reminder letter mailed	2,041	1,302	185
3	10/23		35,272	1,286	165
4	10/30	Cutoff date for Wave 1	18,992	3,354	295
5	11/6	Second survey mailed	9,373	524	126
6	11/13	Second thank you/reminder letter mailed	3,485	2,033	123
7	11/20	Cutoff date for Wave 2 to telephone follow-up	6397	1,657	138
8	11/27	Telephone follow-up begins[1]	9,482	1,010	1,614
9	12/4		2,605	254	4,494
10	12/11	Cutoff for Wave 3 mailing	1,182	89	2,234
11	12/18		548	50	628
12	12/25	Wave 3 mailed	268	118	343
13	1/1		391	264	272
14	1/8		665	56	672
15	1/15		229	34	298
16	1/22	Cutoff date for receipt of mail surveys	160	19	437
17	1/29–2/1	Toll-free line closes	0	12	376
		Telephone follow-up ends			
	TOTAL		**91,090**	**12,432**	**12,458**

[1]Outbound telephone follow-up began November 30th.

4.2   Preparation and Processing of Survey Materials

National Computer Systems (NCS) printed all materials and processed and scanned the returned questionnaires. RTI provided oversight to NCS to ensure correct survey procedures were implemented. NCS submitted proofs of all materials prior to printing, and all survey materials were reviewed and approved by CMS/HCFA and RTI before being sent to the sample members. All data collection materials for this round of the MFFS are included in *Exhibit 4.2*.

Exhibit 4.2: Data Collection Materials for MFFS

Materials	Description	Quantity
English pre-notification letter duplexed with Spanish	1 color, 8.5x11, continuous sheet	168,000
Spanish survey request postcard	1 color, 6x4, prepaid return	165,000
English survey request postcard	1 color, 6x4, prepaid return	3,000
Outgoing window envelopes for pre-notification and thank you/reminder letters	#10, 1 color	336,000
English MFFS survey with inside cover letter (Wave 1 - 168,000; Wave 2 - 107,520; Wave 3 - 7,000)	20 page, 2 color, #60, image scannable with litho code, personalized cover letter	282,520
Spanish CAHPS survey with inside Spanish cover letter (3,000 Puerto Rico residents, estimate of 5,000 requests)	20 page, 2 color, #60, image scannable with litho code, personalized cover letter	8,000
9x12 outgoing window envelopes (English Waves 1-3, and Spanish Waves 1-2)	1 color, 9x12 window	287,520
9x12 business reply envelope	1 color, BRM, folded	287,520
English reminder letters duplexed with Spanish	1 color, 8.5x11, continuous sheet	168,000

The flow of the cases through this complex data collection was guided by a set of disposition codes assigned to cases as they progressed through the data collection activities. These codes allowed staff to track and monitor production and create status reports. Flowcharts that describe the possible outcomes of a case as it was processed through the data collection activities can be found in the 2000 MFFS Survey Data Collection Report (Dimitropolous, 2001).

4.3   Inbound Respondent Calls

All survey materials sent to sample members contained the study's toll-free number for sample members to call if they had questions about the study or to request a telephone interview. The inbound telephone calls from respondents were taken at the NCS telephone center. Inbound respondent calls began 1 day following the mailing of the pre-notification letter. NCS telephone agents were trained extensively by RTI staff on the protocols for answering respondent queries.

If a sample member asked to complete an interview via telephone, the respondent was transferred to the Decision Resources Group (DRG) telephone center, where telephone interviewers administered the questionnaire using the computer-assisted telephone interview (CATI) instrument. Inbound calls were taken by NCS telephone agents through January 5, 2001. After that date, the toll-free number was answered at RTI through January 31, 2001, the end of data collection.

Between October 9 and November 26, 2000, inbound interviews were conducted 5 days a week, Monday through Friday, 6:00 AM MST (8:00 AM EST) until 6:00 PM MST (8:00 PM EST), with the exception of November 23 and 24 (Thanksgiving).

DRG had the capacity to handle 11 inbound interviews at any given time. If more than 11 calls were transferred to DRG, NCS would get a busy signal. The NCS agent then recorded the respondent's information and told the respondent that an interviewer would call back within 24 hours. The respondent was also given the toll-free number at DRG if he or she wished to call DRG directly. NCS faxed the callback information to DRG periodically throughout the day. Spanish-speaking sample members were directed to bilingual interviewers. If no bilingual interviewer was currently on staff, the information was recorded and the call returned as soon as a bilingual interviewer was available.

4.4 Nonresponse Follow-up Data Collection

Approximately 3 weeks after the second mailing, RTI began the follow-up data collection for nonrespondents to the mail survey. There were two modes of follow-up activities: overnight mail survey and telephone interview. If a telephone number was found for a nonrespondent, then the case was routed to the telephone follow-up. If no telephone number was found, the case was sent to the Wave 3 mailing via overnight mail.

4.5 Tracing

RTI took several steps to locate sample members. First, the sample file was run against the NCOA database, which updated 3,872 addresses or 2.3 percent of the sample. Even with this precaution, the U.S. Postal Service returned 2,597 or 1.5 percent of the packages marked "undeliverable" with no new address information. Since CMS/HCFA does not provide telephone numbers for Medicare beneficiaries, it was necessary to conduct some preliminary

tracing prior to the start of the telephone follow-up. RTI used two tracing vendors and the Tracing Operations Unit at RTI (TOPS) in an effort to get telephone numbers for nonrespondents to the mail survey.

Given the short period between Wave 2 and the follow-up effort and the relatively low cost of using a locating vendor, RTI began searching for telephone numbers for the entire sample early in the data collection period. The sample was processed through TeleMatch, a vendor with access to national databases that can match a names and addresses with corresponding phone numbers. We expected that TeleMatch would find phone numbers for approximately 55 to 60 percent of the sample. Cases returned without a telephone number were then processed through FastData, a second vendor.

Neither of these vendors could provide information about the sample members residing in Puerto Rico. However, the CMS/HCFA office in Puerto Rico did help RTI identify telephone numbers for just over half of the 3,000 sample members located in Puerto Rico.

All remaining cases were sent to TOPS for more extensive case-by-case tracing.

It is important to note that the MFFS did not have access to information from the sample member's health plan, as did the CAHPS Disenrollment Survey. The lack of telephone numbers was critical to the outcome of this data collection for two reasons. It significantly reduced the number of cases that could be sent to telephone follow-up, and increased the number of cases that would be sent to the Wave 3 mailing from 7,000 to 42,646. The percentage of telephone numbers yielded by each of these sources is shown in *Exhibit 4.3*.

Exhibit 4.3: Source of Telephone Numbers

Source	Phone Numbers	
TeleMatch	95,722	57.0%
FastData	2,296	1.4%
TOPS (RTI Tracing)	13,859	8.2%
CMS/HCFA Puerto Rico	1,577	0.9%
No phone number	54,539	32.5%
Total	167,993	100%

4.5 Telephone Follow-up

Nonresponse data collection by telephone began on November 30, 2000. Telephone interviewing was conducted 7 days a week (with the exception of December 24, 25, and 31, and January 1. Spanish-speaking interviewers were staffed across all shifts.

RTI trained 350 interviewers and supervisors in preparation to staff 150-175 stations per day. The original nonresponse sample file was estimated to contain approximately 79,000 cases. However, since fewer telephone numbers were found, the telephone follow-up sample contained fewer cases than expected, which caused DRG to reduce staff soon after the follow-up data collection began. DRG planned for a higher level of effort up front to facilitate working through the sample once very quickly, allowing more time to trace respondents who may have moved since the sample was drawn.

DRG received a data file on November 28, 2000 that contained information for all cases that had not responded as of the cutoff date of November 22, 2000. Each valid telephone number was attempted 6-12 times, including refusal conversion, at the direction of RTI staff. Spanish-speaking households were routed to Spanish-speaking interviewers. Initial soft refusals were reinserted and given to interviewers who specialized in refusal conversion techniques.

In anticipation of some overlap between the Wave 2 mailing and the telephone follow-up, RTI included a case disposition that allowed interviewers to record a case as having already mailed in the survey. Since this also provides an easy "soft refusal" for the respondents, RTI reviewed these cases periodically against the returned surveys. If a survey had not been received after an adequate amount of time, the cases were sent back to DRG for follow-up. Refusal conversion specialists were trained to call these cases and inform them that RTI had not received their survey and since they had taken the time to complete the survey, we wanted to be sure their input was recorded.

4.6 Wave 3 Mailing to Nonrespondents

RTI expected only 7,000 cases would require a third mailing. Since the expected rate of return for a third wave mailing to nonrespondents was low and the cost relatively high, a decision was made to select a sample of the 42,646 nonrespondents without telephone numbers. The Wave 3 mailing was sent to 7,773 households selected from the lowest performing GSUs.

This sample contained 703 addresses that were to post office boxes. Since Federal Express does not deliver to such addresses, these packages were sent via U.S. Priority Mail.

4.7 Data Collection Results

The data collection effort achieved a response rate of 61.6 percent among all sample members (including ineligibles) and a response rate among eligible sample members of 63.9 percent. Although the overall response rate for the MFFS Survey was below the 80 percent and higher response rates obtained for recent MMC Surveys, many reasons accounted for this difference, some of which are highlighted below.

Differences Between the MFFS and MMC Populations: The national MFFS population included several groups that are either under-represented or not present in the smaller MMC subpopulation. These include the disabled (under age 65) and beneficiaries who were institutionalized[4] at the time the sample was drawn. The MFFS sample also included a disproportionate number of beneficiaries who were dually eligible for Medicaid at the time the sample was drawn, as well as beneficiaries who resided in Puerto Rico. The dually eligible in both the MMC and MFFS exhibited lower response rates, partially because their status in Medicaid is not a constant. Inclusion of Puerto Rico added complexity to data collection in the MFFS because literacy rates are lower than average among many residents, especially older persons. Although a Spanish version of the questionnaire was developed and employed for the sampled beneficiaries on Puerto Rico, many beneficiaries who speak Spanish do not read in either Spanish or English.

Literacy was also a factor among many of the 25 percent of MFFS-sampled beneficiaries who were 80 years old or older. The response rates for beneficiaries under 65—for the Hispanic population as a whole as well as for the Puerto Rican sample—and among beneficiaries who were 80 years old or over were well below those of other MFFS groups in the national survey.

In addition to known differences between the MMC and MFFS subpopulations, other factors likely affected the difference in response rates between the two surveys. For example, beneficiaries in Medicare-managed care have to make a conscious decision to chose the specific

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[4] Unlike the MMC Survey which used the Group Health Plan (GHP) file as a sampling frame, institutionalized beneficiaries could not be excluded from the MFFS sampling frame because there is no identifying element on the Enrollment Data Base (EDB).

plan they are enrolled in, as opposed to many FFS beneficiaries who enroll in the Original Medicare Health Plan upon becoming eligible for Medicare. The fact that MMC beneficiaries have made a distinct choice may provide them a greater incentive to respond about their experiences in their health plan.

Also, unlike most MMC beneficiaries, the majority of FFS beneficiaries are also enrolled in a supplementary health insurance plan, either through a former employer or through a private health insurance provider. This may result in some confusion on the part of many beneficiaries regarding which health plan is responsible for the care they receive. In fact, 2,950 MFFS beneficiaries who were selected for the 2000 survey (nearly 2 percent of the sample), did not complete the survey because they claimed they were not enrolled in Medicare (despite being identified as such on the Medicare rolls).

Finally, more than twice the proportion of MFFS respondents required assistance completing the questionnaire form (20 percent compared to only 9 percent of MMC respondents), alluding to an FFS population that, as a group, may have greater cognitive difficulties than the MMC population, on average.

Availability of Contact Information: Prior to implementation of the MFFS Survey, it was assumed that the mailing addresses of sampled beneficiaries would be current, deliverable addresses such that the Wave 1 and 2 mailings would yield a 60 percent return of completed surveys. However, despite employing a match of sample addresses with the NCOA, a greater-than-expected proportion of pre-notification letters, reminder postcards, and first and second mailings of the questionnaire were either not returned or returned "address unknown." The mailing phase of the national MFFS, therefore, yielded only a 55 percent response rate, suggesting the current address of many sampled beneficiaries may differ from that in the EDB.

A secondary *a priori* assumption of the national survey's implementation was that telephone numbers would be found for at least 90 percent of nonrespondents to the mail survey and that the telephone follow-up would yield about 10 percent of required completed surveys. However, unlike the MMC survey where the telephone numbers for most sample members are obtainable from most enrollees' health plans, telephone numbers of MFFS sample members are not available from any CMS/HCFA administrative files. As a result, telephone matching

services yielded current numbers for only about half of the nonrespondents to the MFFS mail survey, even after a concerted tracing effort.

Comparability with the MFFS Field Test: The MFFS field test survey was conducted in 1998 in four states and achieved an overall response of 66 percent, ranging from 60 percent in Pennsylvania to greater than 70 percent in Wisconsin. Unlike the MFFS Survey, however, the field test sample employed a frame that had been designed for another CMS/HCFA survey (the FFS Health of Seniors Survey). As such, the field test survey was able to exclude, at least from portions of the sample, beneficiaries who were known to be institutionalized, had a language barrier, were physically/mentally incapable, and who had moved or were away from the sample state during the survey.

Given differences in characteristics of the MFFS and MMC populations, differences in the CMS/HCFA administrative data on either population, and the lack of available telephone numbers among many MFFS sample members, response rate differences between the Medicare CAHPS surveys are likely to continue. In spite of this, the response rates to the MFFS Survey were sufficient to provide robust CAHPS measures for reporting comparable beneficiary experience and satisfaction for the Original Medicare plan in all areas where MMC is available. It should also be noted that the 2000 MFFS Survey response rates also support reporting MFFS CAHPS measures at other sub-state levels that are smaller than those required for comparisons with MMC as well as for areas where no MMC plans are available.

5. Analysis of Case-Mix Strategies and Recommendations

The 2000 MFFS Survey centered around two types of comparisons: beneficiary comparisons of MFFS and MMC within local areas, and administrative comparisons of MFFS across local areas. Case-mix adjustment (CMA) is a central element in these comparisons. CMA attempts to remove, from ratings and reports of care, response patterns that are systematically associated with such patient-level characteristics as demographics, education, and general health status, which may vary considerably across reporting units. These systematic patterns of association may reflect "response bias," response patterns that do not correspond to actual differences in quality of care. In any event, these are patient characteristics that are generally agreed to be beyond the control of providers or plans once they have been selected by beneficiaries.

Therefore, the goal of CMA can be envisioned as follows: to estimate the ratings and reports that a plan or collection of FFS providers would have received if all providers and plans treated the same standardized population of patients (Medicare beneficiaries). This adjustment should make attributions of ratings and reports to FFS providers and managed care plans more appropriate, supporting better decision-making by beneficiaries and quality improvement by Peer Review Organizations (PROs) and CMS/HCFA.

The two goals of MFFS CMA (within-MFFS comparison and MFFS-vs.-MMC comparison) suggest two distinct, but similar, CMA models. *Exhibit 5.1* describes the independent variables recommended for CMA.

The present study finds that the case-mix adjusters currently employed in within-MMC CMA (age, education, self-rated health status, and proxy respondent status[5]) constitute an effective case-mix model for both comparison purposes. An indicator of dual-eligibility further enriches the within-MFFS model. A self-rated mental health item demonstrates the potential to improve both models in the future.

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[5] While proxy respondent status has only a small empirical effect on CMA, it has been included because many stakeholders feel it is important for the face validity of CMA.

Exhibit 5.1: Description of Independent Variables Used in MFFS CMA

Name (Dummies)	Description	Response Options
AGE (AGE64, AGE6569, AGE7579, AGE80)	Age	<65 (disabled), 65-69, 70-74, 75-79, >79
EDUC (LESS8GRD, SOMEHIGH, SOMECOLL, COLLGRAD, COLLMORE)	Education	<8th grade, some high school, high school graduate, some college, college graduate, >college graduate
GHP (EXCEL, VERYGOOD, FAIR, POOR)	General health perception	Excellent, very good, good, fair, poor
MHP (MHEXCEL, MHGOOD, MHFAIR, MHPOOR)*	Mental health perception	Excellent, very good, good, fair, poor
(PROXY, ANSPROXY)	Proxy respondent status	No assistance on survey, someone helped but did not answer for you, someone answered for you
DUALELIG[#5]	Dual eligibility indicator (eligible for Medicaid program)	Yes, no

*   Recommended for future use
\#   Recommended for within-MFFS use only

Within-MFFS CMA employs the above independent variables plus dummies corresponding to the geounits being compared (county-based sampling stratum, state, or CMS/HCFA region) in a linear regression. In these regressions, CAHPS® ratings and reports serve as dependent variables, sometimes in their original forms, sometimes dichotomized to correspond to displays of data to consumers. In MFFS-vs.-MMC CMA, the same variables shown in Exhibit 5.1 (minus the dual eligibility indicator) also serve as independent variables in a linear regression, but dummies correspond to MMC plans, with MFFS treated as an additional "plan."

The present study finds that the assumptions behind CMA are satisfied or can be accommodated with simple adjustments. There is evidence that age, education, general health status, and mental health status do not have linear effects on the outcomes being adjusted. For example, while ratings generally increase with increasing age, the difference between ages under 65 (disabled) and ages 65 to 69 is considerably larger than any other two adjacent age categories. Also, while ratings generally decrease with increasing education, beneficiaries with some high

school (but not a high school degree) give slightly more positive ratings than beneficiaries with eight or fewer years of education. And while ratings generally increase with better self-reported general health status, the increase from one category to the next varies with the outcome being considered. For reasons such as these, the continuous independent variables were entered as dummies (see Exhibit 5.1).

The coefficients of general health status and age vary across CMS/HCFA regions within MFFS (and within MMC). The effects of general health perception are greatest in region nine (Pacific) and smallest in region four (South Atlantic). Interestingly, this means that the MFFS coefficients are most like the MMC coefficients in a region with high managed care penetration and least like MMC coefficients in a region with low managed care penetration.[6] The effects of age within MFFS are greatest in regions eight, nine, and ten (West, Pacific, and Northwest), and smallest in region two (NY/NJ/Puerto Rico). For these reasons, interactions between CMS/HCFA region dummies and (linear) age and (linear) general health status were added to within-MFFS and MFFS-vs.-MMC CMA models, as has been the practice for within-MMC CMA. This allowed these coefficients to reflect this regional variation.

While the direction of CMA coefficients is similar for MFFS and MMC, the magnitudes of the effects sometimes differ. In particular, the well-established tendency of healthier beneficiaries to rate their care more positively or to report better health care experiences is considerably stronger in MMC than in MFFS, with MMC slopes generally 50 to 100 percent larger than MFFS slopes. In other words, satisfaction with one's health care is much more sensitive to one's health status in MMC than it is in MFFS.

We implemented MFFS-vs.-MMC CMA in a manner that allows CMA coefficients to be independently estimated within MFFS and within MMC. A major implication of the difference in health status coefficients is that the difference between the case-mix adjusted mean of a managed care plan and an FFS reporting entity depends upon the reference population. CMA to a healthy reference population would be relatively more favorable to MMC, and CMA to an unhealthy reference population would be relatively more favorable to MFFS. Our MFFS-vs.-MMC CMA adjusts to the midpoint of MFFS beneficiary and MMC beneficiary characteristics.

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6 This may be evidence of a managed care "spillover effect."

Because of the generally poorer health status of MFFS beneficiaries (even excluding the dually-eligible), CMA here tends to make small adjustments in favor of MFFS relative to MMC.

In comparing MFFS and MMC, there was concern that underlying geographic factors not captured in a case-mix model might inappropriately influence MFFS-vs.-MMC comparisons. In order to ensure geographic equivalence of state-level comparisons, county-based "geographic equivalence weights" (GEWs) were created in the 43 "states" (including the District of Columbia) where MMC exists. These weights were then combined with MFFS sampling weights (described in **Chapter 3** of this report).

A state-level analysis examined the impact of CMA and weights on MFFS-vs.-MMC comparisons. Whether considered alone or in combination with weights, CMA almost always adjusts in favor of MFFS. On the other hand, the weights, whether alone or in combination with CMA, tend to adjust in favor of MMC, although not with as much consistency as CMA adjusts towards MFFS. Since the GEWs tend to emphasize FFS beneficiaries in counties with high MMC penetration, their tendency to favor MMC might reflect lower FFS ratings in high MMC-penetration counties. The net effect of these often opposite components sometimes favors MFFS and sometimes favors MMC.

The net effects of CMA and weighting on state-level MFFS-vs.-MMC comparisons are moderate in magnitude. The largest net adjustments are substantial—0.24 to 0.44 points on 0-to-10 scales with typical means near 9, and 5.3 to 8.3 percentage points for the percentage of 10s.

As a final issue, the existence of strong and different case-mix effects for health status between MMC and MFFS suggests that stratified reports by beneficiary health status be considered. In fact, the Subgroup Analysis Report demonstrates that there are many instances in which a "cross-over" occurs: Less healthy beneficiaries are more satisfied with MFFS than with MMC, whereas healthier beneficiaries are more satisfied with MMC than MFFS.

6. Geographic Units Analysis

6.1. General Overview

While the MMC Survey reports its results on the basis of health plans, this is not an option for the MFFS Survey, which must report its results on the basis of geographic aggregations. In order to enable comparisons in a given service area, the MFFS and the MMC surveys must sample overlapping geographic areas. To provide CMS/HCFA and state PROs with data about geographic variation in health care quality within the MFFS population, the MFFS survey must obtain geounit and state CAHPS estimates by sampling all geounits in the state.

A total of 276 geounits (600 surveys per unit) were assigned to the 50 states, District of Columbia, and Puerto Rico. Details of the construction of the geounits are presented in **Chapter 3**. In 2000, MMC plans were operating in 259 geounits in 42 states and the District of Columbia. CAHPS measures provided by MFFS Survey respondents living in these geounits were compared to CAHPS measures provided by MMC Survey respondents. The results of the MFFS and MMC comparisons are presented in **Chapter 7.7**.

6.2   Objectives

The goal of the geounit variance component analysis is to determine the amount of variation explained by the hierarchical levels of county, geounit, and state. By making this determination, we will be able to address the question of whether the geounits are "well aligned" using an empirical criteria: Are counties within geounits more homogenous in CAHPS ratings than counties in different geounits within a state? If the answer is no but the geounits are meaningful for aggregations for the purpose of comparisons with MMC, then the geounits would still be appropriate. However, if the variance at the geounit is small compared to that at the state level, we could collapse geounits to conserve sample.

6.3   Methodology

Of the 103,551 completed, non-duplicate surveys, less then 88,000 were eligible for variance component analysis at the state (includes the 50 states, DC, and Puerto Rico), geounit,

county, and individual levels. After removing the ten consisting of only one geounit each, and 33 geounits containing only one county each, where at least two observations are required to compute an estimate of variance, 87,248 eligible surveys remained.

Finally, surveys were eliminated for counties with fewer than two respondents. The number of counties thus eliminated from analysis varied by CAHPS measure due to item nonresponse and skip patterns. Variance component analyses were then carried out for the counties with two or more respondents.

In order to examine the amount of variability explained by state, geounit, county, and individual, variance component analyses were performed on four ratings and two composites listed in *Exhibit 6.1*. The four ratings were originally coded on a discrete scale from 0 to 10, with 0 denoting the worst and 10 denoting the best possible rating. For analysis purposes, these variables were re-coded as binary outcomes with 1 denoting the best possible rating (10) and 0 denoting all other ratings (0-9). The indicators that comprise the composites were also recoded as dichotomous variables. It was found that the dichotomous form of these CAHPS measures had greater variability than their categorical form, and were thus a better choice for these analyses.

Composite variables were re-coded with 1 indicating a response of "always" and 0 indicating all other nonmissing responses. These individual level composites were only calculated for those surveys where at least 50 percent of the composite defining variables were nonmissing, ensuring that only respondents with substantially complete answers were included.

Variance component analyses were carried out at all geographic levels for the four ratings and two composites. Variance components were computed at the county and individual level using the SUDAAN software procedure DESCRIPT and also using a binomial formula for within and between variance at the county level. Variance component analyses were carried out on the fully nested—by state, geounit, and county model—using the SAS procedure MIXED.

6.4   Results

Exhibit 6.1 lists the county-level variance component estimates for the MIXED procedure analysis. In all cases, county accounted for the vast majority of the variability, while

state accounted for the second largest amount of variability and geounit accounted for the least amount of variability.

An individual-level variance component analysis was performed using SUDAAN, and the results were compared with a (binomial) formula-based estimate. **Exhibit 6.2** lists the variance component estimates derived from the SUDAAN analysis along with county- and individual-level, formula-based estimates of variance. In every case, the individual level explains nearly all of the total variability, followed in order by county, state, and geounit. Due to mathematical constraints, some of the variance component estimates are very small, negative numbers that should be interpreted as zero.

Exhibit 6.1: Variance Component Analysis Using County-Level Means

Rating/Composite	Level	Component*	Percent
Rate Personal Doctor	State	0.00246	8.2%
	Geounit	0.00000	0.0%
	County	0.02754	91.8%
	Total	0.03000	100.0%
Rate Specialist	State	0.00102	2.2%
	Geounit	0.00029	0.6%
	County	0.04594	97.2%
	Total	0.04725	100.0%
Rate Health Care	State	0.00053	1.7%
	Geounit	0.00002	0.1%
	County	0.03090	98.2%
	Total	0.03146	100.0%
Rate Medicare	State	0.00156	5.8%
	Geounit	0.00003	0.1%
	County	0.02549	94.1%
	Total	0.02709	100.0%
Communication Composite	State	0.00049	0.2%
	Geounit	0.00419	1.6%
	County	0.25840	98.2%
	Total	0.26308	100.0%
Respect Composite	State	0.00031	0.2%
	Geounit	0.00017	0.1%
	County	0.19010	99.8%
	Total	0.19057	100.0%

* Only includes counties with more than one respondent.

Exhibit 6.2: Individual-Level Variance Component Estimates

Rating/Composite	Level	SUDAAN Component	Percent	Formula Component
Rate Personal Doctor	State	0.00130	0.5%	
	Geounit	-0.00008	0.0%	
	County	0.00445	1.8%	0.00000
	Individual	0.24787	100.0%	0.24795
	Total	0.24787	100.0%	0.24795
Rate Specialist	State	0.00072	0.3%	
	Geounit	-0.00005	0.0%	
	County	0.00196	0.8%	-0.00001
	Individual	0.24932	99.0%	0.24911
	Total	0.25195	100.0%	0.24910
Rate Health Care	State	0.00082	0.3%	
	Geounit	0.00000	0.0%	
	County	0.00382	1.5%	0.00000
	Individual	0.24831	100.0%	0.24753
	Total	0.24831	100.0%	0.24753
Rate Medicare	State	0.00117	0.5%	
	Geounit	0.00020	0.1%	
	County	0.00502	2.0%	0.00000
	Individual	0.24689	100.0%	0.24591
	Total	0.24689	100.0%	0.24591
Communication Composite	State	0.00056	0.4%	
	Geounit	-0.00015	-0.1%	
	County	0.00275	1.9%	0.00000
	Individual	0.14511	100.0%	0.14875
	Total	0.14511	100.0%	0.14875
Respect Composite	State	0.00032	0.3%	
	Geounit	0.00006	0.0%	
	County	0.00274	2.3%	0.00000
	Individual	0.11731	100.0%	0.12445
	Total	0.11731	100.0%	0.12445

6.5   Discussion

The results of the geounits analyses, which are consistent across the various procedures used, indicate that the vast majority of variability is at the individual level. Of the higher levels of geographical aggregation, for the measures examined in this analysis, the geounit is the least important. Within a particular state, and likely across states, geounits tend to look alike with

respect to responses on the CAHPS measures. There are, in fact, geographic differences, but these are attributable to the differences in composition of beneficiaries.

While the geounits do not contribute in any statistically meaningful way for purposes of analysis, that they are essential for the creation of comparisons to MMC. Due to the many constraints imposed by the aggregation of counties criteria, there are few alternatives for the creation of geounits that will allow comparison to MMC. The current geounits perform well in that respect and should be modified only to conform to the changing MMC landscape.

Based on the geographical units analysis and other experience during the initial implementation of the MFFS survey, several changes will be made to the sampling design for subsequent rounds. The 30 large metropolitan counties whose samples were capped at 600 will have their sample sizes increased to 800, resulting in more proportionate coverage. For the six states consisting of a single geounit, the sample sizes will be increased from 600 to 700, which will result in increased precision of the state estimates. The sample size allocation to Puerto Rico will be reduced from 3,000 down to 1,200. For the three geounits with samples insufficient to adequately match with MMC at the county level, the sample size will be doubled from 600 to 1,200. For the 11 noncapped geounits with the lowest response rates in the 2000 MFFS survey, sample size will be increased from 600 to 700 to ensure at least 300 respondents per geounit (a CAHPS requirement). The net effect of all these changes will be to increase the sample size by almost 10,000: from 168,000 to 177,950 beneficiaries.

Subsequent implementations also will include a geographical information system (GIS) component that will enhance the presentation of the MFFS survey data. Mapping options will include county-, geounit-, state-, and CMS/HCFA region-level presentations of demographics and survey response data.

7. Subgroup Analyses

7.1 Introduction

The subgroup analysis highlights variations in ratings and composites across geographic levels, among subgroups of beneficiaries within the MFFS plan at the regional and individual levels, and between beneficiaries enrolled in MFFS and MMC by state and health status.

Notable findings from these analyses include the following:

- Across geounits, states, and CMS/HCFA regions, a consistent pattern emerged among MFFS beneficiaries with the Needed Care composite having the highest percentage of most positive responses and Rate Medicare having the lowest percentage of most positive responses.

- Ratings and composites vary by subgroups of MFFS beneficiaries; differences in ratings and composites were found by insurance status (dually eligible, with versus without insurance in addition to Medicare), self-reported health status, race, and age. However, these differences were not always consistent.

- With the exception of Medicare Customer Service, no more than 20 percent of MFFS beneficiaries responded negatively to all CAHPS performance indicators and ratings.

- MFFS beneficiaries who are younger, more educated, in poorer health, and who do not have a personal doctor are generally less satisfied with MFFS than their counterparts.

- On a national level, neither MFFS nor MMC beneficiaries consistently provided more positive responses across all indicators.

- Beneficiaries in excellent/very good health perceive their plans and the care they receive differently than those in fair/poor health. Generally, a larger proportion of beneficiaries in fair/poor health give MFFS higher ratings while a larger proportion of those who rate their health as excellent/very good give MMC higher ratings.

7.2 Case-mix Adjustment (CMA)

CMS/HCFA is required by the 1997 Balanced Budget Act to provide beneficiaries with information that will enable them to choose between Medicare plan options. This requirement necessitates the construction of CAHPS composites and ratings which can be compared across managed care plans and between managed care and fee for service. This implies that composites

from the MFFS survey should be constructed as similarly as possible as those from the MMC survey.

Because CMS/HCFA intends to provide quality information to support Medicare beneficiaries' decisions among Medicare health plans, it is essential to adequately adjust for differences between the composition of Medicare beneficiaries in FFS and managed care when reporting these data. For MFFS, this adjustment must be made at the reporting unit level and must be comparable in rigor and scope to the adjustment made on the MMC sample in order to make like comparisons.

CMA of consumer ratings can provide more valid health plan comparisons than unadjusted ratings by controlling for factors related to systematic response biases for questions about experience obtaining health care services. Adjusted data are therefore potentially more appropriate for comparing the quality of care delivered. If members of a particular demographic group are more or less inclined than others to assign poor ratings to bad care, and members of this group are disproportionally enrolled in some Medicare health plans, or, as in the case of within-MFFS comparisons, reside in some geographic area, CMA for this systematic bias is then useful when comparing assessments of different plans or different regions. In many markets, MFFS beneficiaries tend to be older and more frail compared with MMC beneficiaries. In order to present fair comparisons, the influence of plan composition must be accounted for in the reporting statistic. A similar argument can be made for comparisons of ratings and composites for different geounits within the MFFS population.

For these reasons, all ratings and composites used to compare MFFS and MMC, or regions within the MFFS population, are case-mix adjusted. The CMA summary in Chapter 5 provides further detail.

7.3 Beneficiaries with Plan Choice

Comparisons of health care satisfaction between MMC and MFFS beneficiaries must be considered in the context of accessibility to Medicare + Choice (M+C) plans. Estimates generated from the 2000 MMC and MFFS Satisfaction Surveys indicate that 63.0 percent (+/-0.2 percent) of the 29.6 million Medicare FFS beneficiaries eligible for the 2000 MFFS survey lived in a county that had at least one M+C plan. The availability of M+C plans varied considerably by state, region of country, and by beneficiaries' proximity to a major urban area. Medicare FFS

beneficiaries in eight states had no access to M+C plans at all, and state-wide access was only available in three states (HI, NJ, and RI). Regionally, access to M+C plans ranged from a low of 30.1 percent for MFFS beneficiaries in the region covered by the Denver Regional Office, to a high of 87.8 percent for those in the region covered by the San Francisco Regional Office.

Proximity to a major urban area was the most significant factor in the availability of M+C plans for MFFS beneficiaries. In 2000, 80.8 percent (+/-0.2 percent) of Medicare FFS beneficiaries living in Metropolitan Statistical Areas (MSAs) had access to M+C plans. This compares to 32.4 percent (+/-0.6 percent) of MFFS beneficiaries living in counties adjacent to MSAs, and only 11.2 percent (+/-0.5 percent) of MFFS beneficiaries living in counties not adjacent to MSAs. Clearly, the comparisons between MMC and MFFS presented in this report need to be tempered with the geographic realties of Medicare beneficiaries' access to M+C plans. Because of the variation in the availability of a M+C plan, ratings and composites used for MFFS and MMC were weighted to include the subset of the MFFS who reside in an area with plan choice.

7.4   Performance Indicators

The analyses presented in this report examine differences (across selected data aggregation), options for the most positive CAHPS ratings, and responses (i.e., "10," "always," "not a problem," or "yes") to the performance indicators and corresponding survey questions shown in *Exhibit 7.1* (the complete 2000 MFFS Survey may be found in *Appendix A*).

Exhibit 7.1: CAHPS Ratings/Composites and Corresponding Survey Questions

Rating / Composite	Question No.
Rate Personal Doctor (from 0-10)	
▪ We want to know your rating of your personal doctor or nurse. Use any number from 0 to 10 where 0 is the worst possible doctor or nurse, and 10 is the best personal doctor or nurse possible. How would you rate your personal doctor or nurse now?	7
Rate Specialist (from 0-10)	
▪ We want to know your rating of the specialist you saw most often in the last 6 months, including a personal doctor if she or he is a specialist. Use any number from 0 to 10 where 0 is the worst specialist possible, and 10 is the best specialist possible. How would you rate the specialist?	11
Rate Health Care (from 0-10)	
▪ We want to know your rating of all your health care in the last 6 months from all doctors and other health providers. Use any number from 0 to 10 where 0 is the worst health care possible and 10 is the best health care possible. How would you rate all your health care?	30
Rate Medicare* (from 0-10)	
▪ How would you rate all your experience with Medicare? Use any number from 0 to 10 where 0 is the worst health plan possible and 10 is the best health plan possible.	46
Needed Care composite* (1 = big problem, 2 = small problem, 3 = not a problem)	
▪ In the last 6 months, how much of a problem, if any, was it to get the care you or a doctor believed necessary?	21
▪ In the last 6 months, how much of a problem, if any, were delays in health care while you waited for approval from Medicare?	22
▪ How much of a problem, if any, was it to get a personal doctor or nurse you are happy with?	4
▪ In the last 6 months, how much of a problem, if any, was it to see a specialist that you needed to see?	9
Good Communication composite* (1 = never, 2 = sometimes, 3 = usually, 4 = always)	
▪ In the last 6 months, how often did doctors or other health providers listen carefully to you?	26
▪ In the last 6 months, how often did doctors or other health providers explain things in a way you could understand?	27
▪ In the last 6 months, how often did doctors or other health providers show respect for what you had to say?	28
▪ In the last 6 months, how often did doctors or other health providers spend enough time with you?	29
Care Quickly composite* (1 = never, 2 = sometimes, 3 = usually, 4 = always)	
▪ In the last 6 months, when you called during regular office hours, how often did you get the help or advice you needed?	14
▪ In the last 6 months, how often did you get an appointment for regular or routine health care as soon as you wanted?	16
▪ In the last 6 months, when you needed care right away for an illness or injury, how often did you get care as soon as you wanted?	18
▪ In the last 6 months, how often did you wait in the doctor's office or clinic more than 15 minutes past your appointment time to see the person you want to see?	23
Respectful Treatment composite (1 = never, 2 = sometimes, 3 = usually, 4 = always)	
▪ In the last 6 months, how often did office staff at a doctor's office or clinic treat you with courtesy and respect?	24
▪ In the last 6 months, how often were office staff at a doctor's office or clinic as helpful as you thought they should be?	25
Medicare Customer Service composite (1 = big problem, 2 = small problem, 3 = not a problem)	
▪ In the last 6 months, how much of a problem, if any, did you have with paperwork for Medicare?	41
▪ In the last 6 months, how much of a problem, if any, was it to find or understand information in the written materials?	43
▪ In the last 6 months, how much of a problem, if any, was it to get the help you needed when you called Medicare customer service?	45
Flu Shot indicator* (yes or no)	
▪ Did you get a flu shot last year at any time from September to December 1999?	79

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* Indicates composites or ratings featured on the Medicare Compare website (http://www.medicare.gov/mphCompare/home.asp).

To remain consistent with the Medicare Compare website, most comparisons throughout this report are based upon extreme response categories.

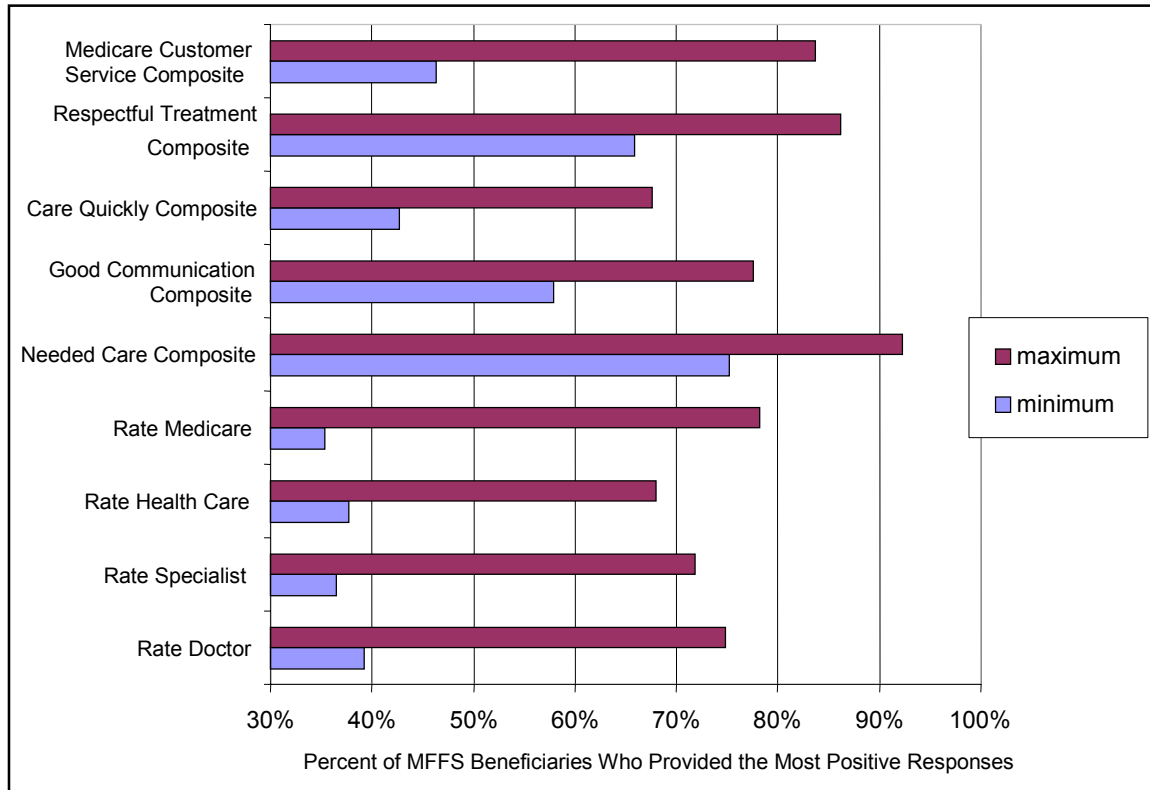## 7.5   Geographic Variation in Composites and Ratings by MFFS Subgroups

Geographic variation in CAHPS composites and ratings was examined for beneficiaries in the MFFS plan. Only findings related to beneficiaries of MFFS are discussed. The results are reported for the nation as a whole, aggregated to different geounits (e.g., CMS/HCFA region, state, and geographic sampling region), and stratified by several key beneficiary characteristics including demographics, insurance, and self-reported health status. These analyses were performed with the goal of gaining a better understanding of the differences in satisfaction with and perceptions of health care services and Medicare by subgroups of beneficiaries within the MFFS population.

Ratings and composites were constructed using the CAHPS 3.0 macros, case-mix adjusted and weighted, for the measures shown in Exhibit 7.1. Key findings and conclusions are summarized below.

Key Findings

There was geographic variation in the proportion of the most positive responses (i.e., "10," "always," or "not a problem") for the nine indicators; however, this was not consistent for all indicators. For example, the Needed Care composite had the highest percentage of beneficiaries giving the most positive responses (92 percent for the highest geounit and 75 percent for the lowest, for a range of 17 percentage points), whereas a number of other indicators had greater variations between regions with the highest and lowest proportions of positive ratings, including *Rate Medicare (78 percent versus 35 percent), Rate Doctor (75 percent versus 39 percent), Rate Specialist (72 percent versus 36 percent)*, and the *Medicare Customer Service composite (84 percent versus 46 percent)*. These findings are illustrated in ***Exhibit 7.2***.

Exhibit 7.2: Range of Most Positive Responses[1] Across Geographic Areas

Chart categories (top to bottom): Medicare Customer Service Composite, Respectful Treatment Composite, Care Quickly Composite, Good Communication Composite, Needed Care Composite, Rate Medicare, Rate Health Care, Rate Specialist, Rate Doctor.

Legend: maximum, minimum

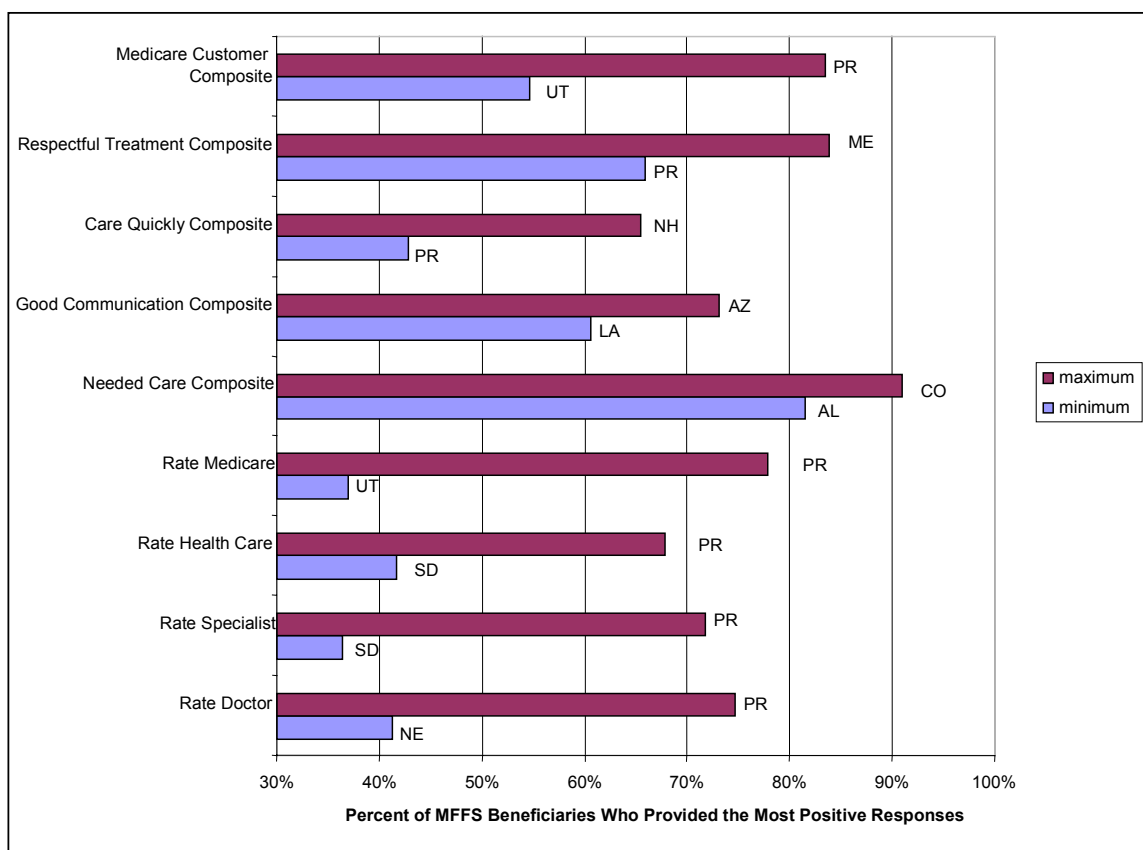X-axis: Percent of MFFS Beneficiaries Who Provided the Most Positive Responses (30% to 100%)

[1] Most positive responses include a rating of 10, or answers of "always" or "not a problem."

For a number of ratings and composites, Puerto Rico had the highest percentage of the most positive responses.

There were state variations in ratings and composites; however, these were somewhat less than those found at the geounit level. The greatest percentage differences in the most positive responses were found for the indicators *Rate Medicare (78 percent versus 37 percent), Rate Doctor (75 percent versus 41 percent), Rate Specialist (72 percent versus 36 percent)*, and the *Medicare Customer Service composite (83 percent versus 55 percent)*. See **Exhibit 7.3**.

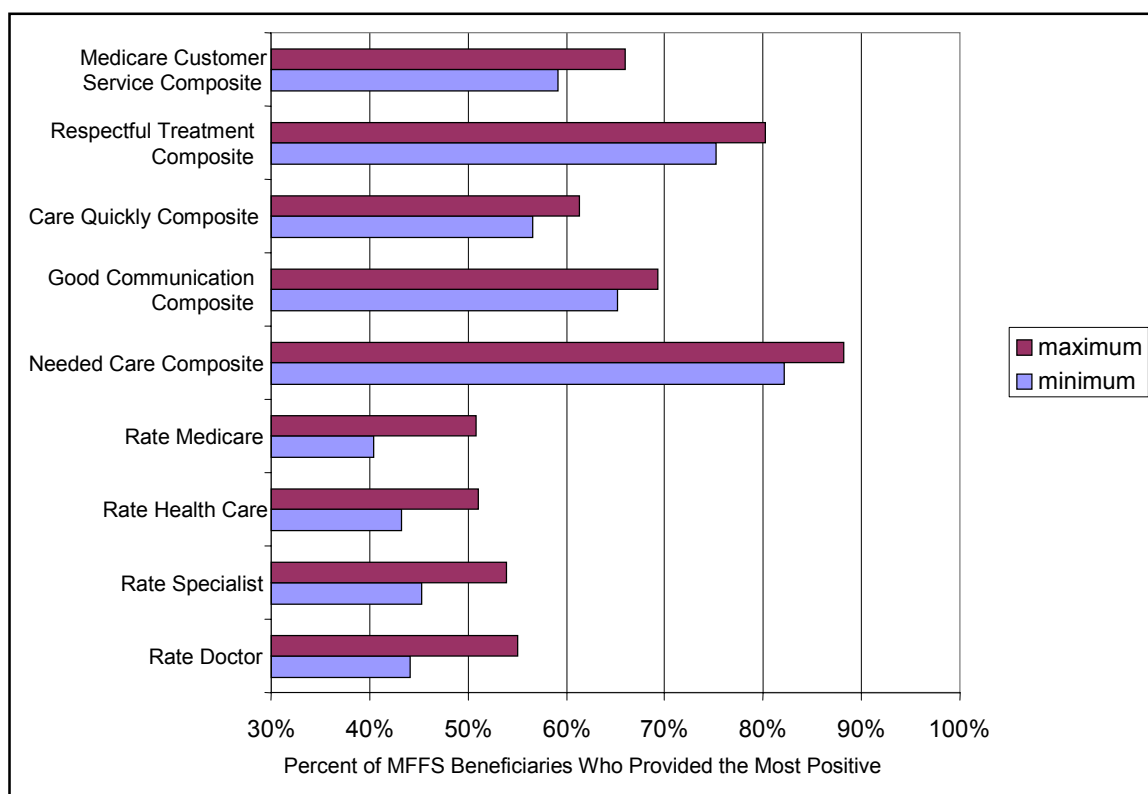**Exhibit 7.3: Range of Most Positive Responses[1] Across States**

[1] Most positive responses include a rating of 10, or answers of "always" or "not a problem."

As with the geounit analysis, Puerto Rico had the highest percentage of the most positive responses. However, these were not always consistent. While Puerto Rico the highest percentage of the most positive responses for Rate Specialist, it also had the lowest percentage of beneficiaries giving the most positive responses for the Care Quickly composite and the Respectful Treatment composite.

Ratings and composites varied by CMS/HCFA region; however, differences were less dramatic than at lower levels of aggregation. The percentage point differences among regions were less than those found at the geounit or state level, with a high of 11 percentage points difference between the minimum and maximum for Rate Doctor (55 percent versus 44 percent), and a low of 4 percentage points difference for the Good Communication composite (69 percent versus 65 percent). Again, the greatest percentage differences in the most positive responses were found for the indicators *Rate Medicare, Rate Doctor, Rate Specialist,* and the *Medicare Customer Service composite*. These findings are illustrated in ***Exhibit 7.4***.

**Exhibit 7.4: Range of Most Positive Responses[1] Across CMS/HCFA Regions**

[1] Most positive responses include a rating of 10, or answers of "always" or "not a problem."

Across geounits, states, and CMS/HCFA regions, a consistent pattern emerged: The highest percentages of positive responses were observed for the Needed Care composite and the lowest percentages of the most positive responses for the Rate Medicare indicator.

Subgroups of Medicare beneficiaries displayed variation in ratings and composites by insurance status (dually eligible, with versus without insurance in addition to Medicare), self-reported health status, race, gender and age. However, these differences were not always consistent.

A higher percentage of beneficiaries who are dually eligible assigned ratings of "10" for their personal physicians, specialists, health care, and Medicare (i.e., Rate Doctor, Rate Specialist, Rate Health Care, and Rate Medicare indicators) than those who had additional insurance or no additional insurance. However, for two of the composite indicators (Good Communication and Needed Care composites), a slightly lower percentage of dually eligibles gave positive responses compared with beneficiaries with and without additional insurance. See *Exhibit 7.5*.

**Exhibit 7.5: National-Level Variation of CAHPS Satisfaction Ratings and Composites By Type of Insurance[1]**
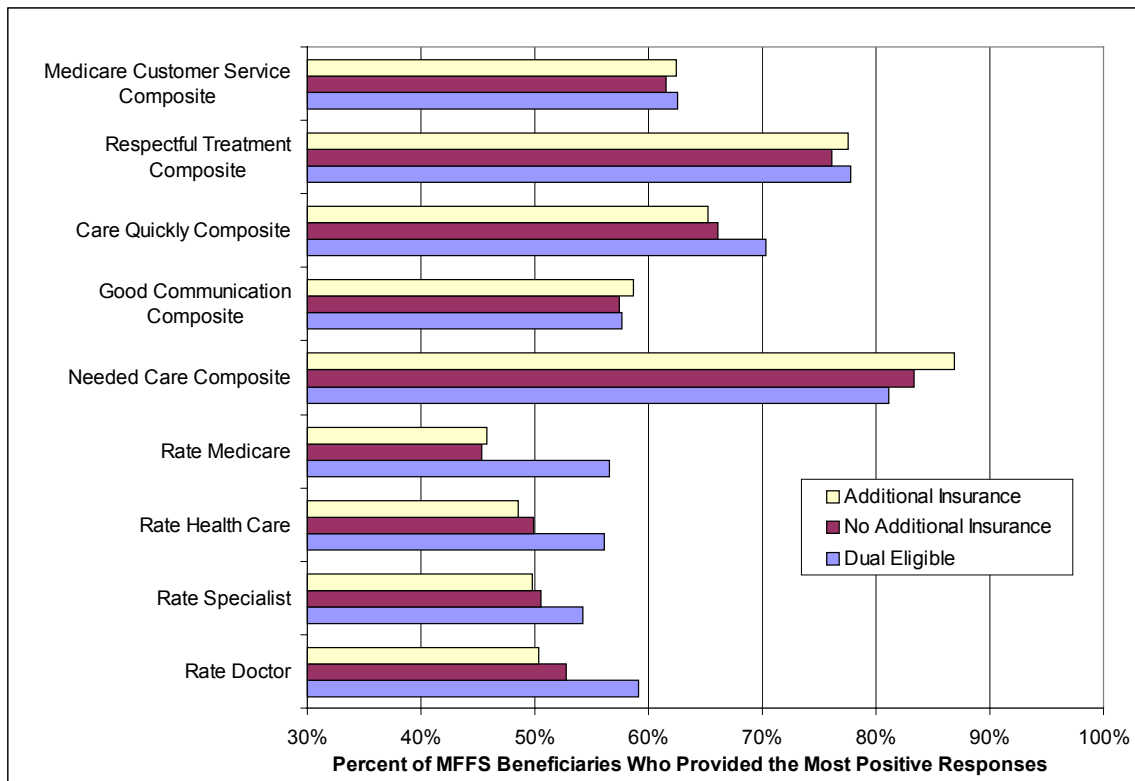
[1] Estimates are weighted and case-mix adjusted

A lower proportion of beneficiaries who self-report chronic illness gave the extreme positive response across all indicators, compared with beneficiaries with no self-reported chronic illness. The findings are presented in *Exhibit 7.6*.
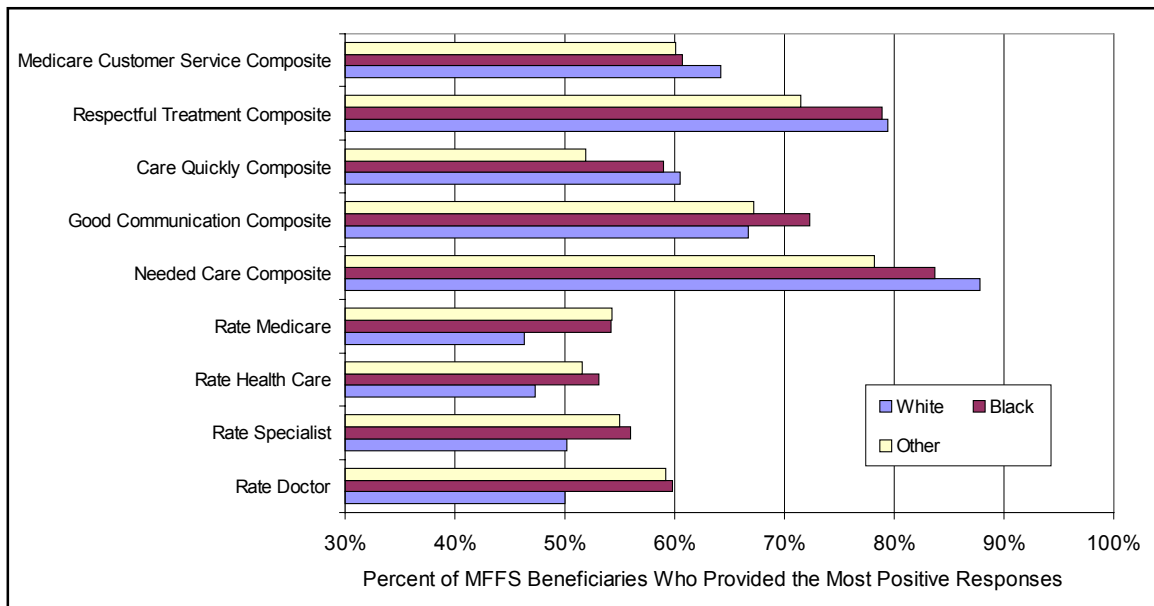
Exhibit 7.6: National-Level Variation of CAHPS Satisfaction Ratings and Composites By Chronic Illness[1]

Percent of MFFS Beneficiaries Who Provided the Most Positive Responses

Legend: No Chronic Illness; Chronic Illness
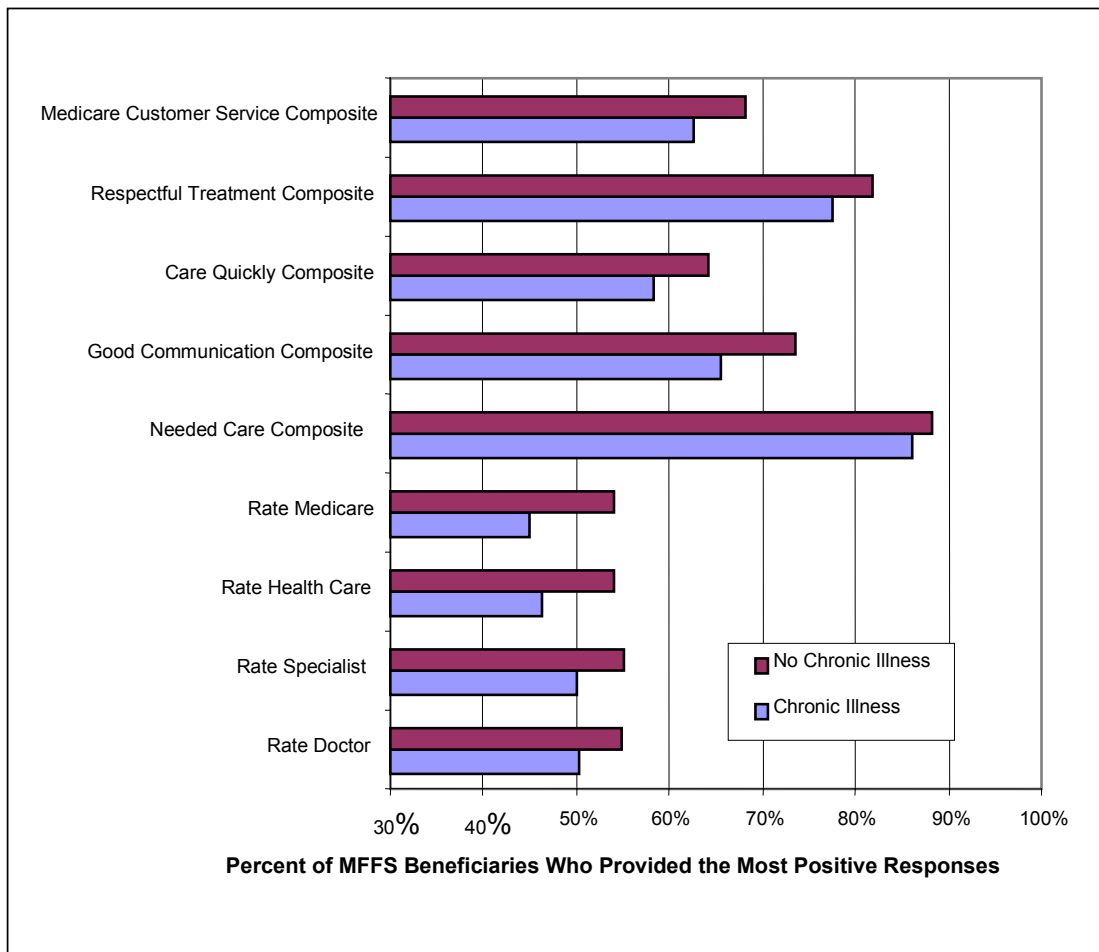
[1] All estimates are weighted

There are different patterns of responses by race to ratings compared with composites. Those of White race provided the highest percentage of positive responses for four of the five composite indicators (Needed Care, Care Quickly, Respectful Treatment, and Medicare Customer Service) when compared with those of African-American/Black or other race. In contrast, those of White race provided the lowest percentage of positive responses for all four ratings indicators (Rate Doctor, Rate Specialist, Rate Health Care, Rate Medicare). Although the findings across race categories may be inconsistent, we found notable differences among all of the identified performance indicators. See *Exhibit 7.7*.

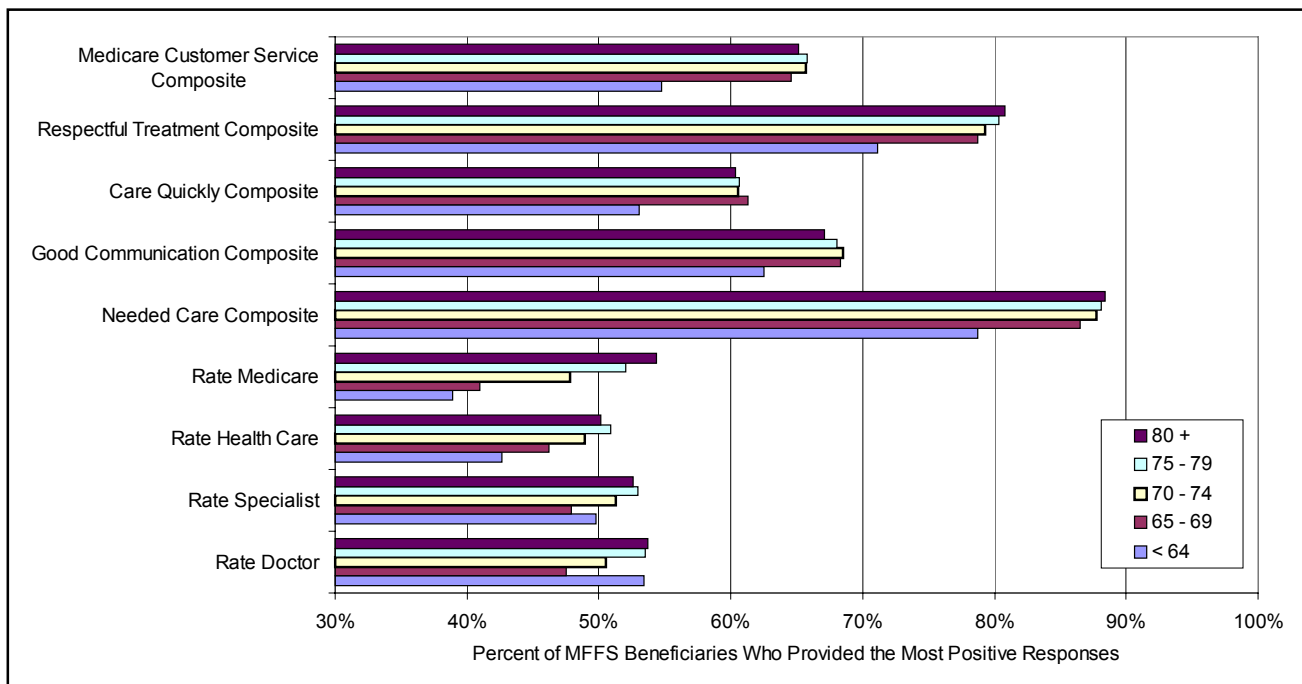**Exhibit 7.7: National-Level Variation of CAHPS Satisfaction Ratings and Composites By Race[1]**

[1] Estimates are weighted and case-mix adjusted

In general, Medicare beneficiaries under 65 years of age were less satisfied than those aged 65 and older. See *Exhibit 7.8*.

Exhibit 7.8: National-Level Variation of CAHPS Satisfaction Ratings and Composites By Age[1]

[1] All estimates are weighted.

On a national level, the vast majority of Medicare beneficiaries indicated that they always receive needed care (87 percent); extreme positive responses for Respectful Treatment and Good Communication with Physician or Nurse were also high (79 percent and 67 percent). Extreme positive ratings for Medicare (47 percent), Health Care (48 percent), Specialist (50 percent) and Doctor (51 percent) were relatively lower. See *Exhibit 7.9*.

Exhibit 7.9: National Percentage Estimates of Most Positive Responses[1]
Averaged Across Geographic Aggregation Options
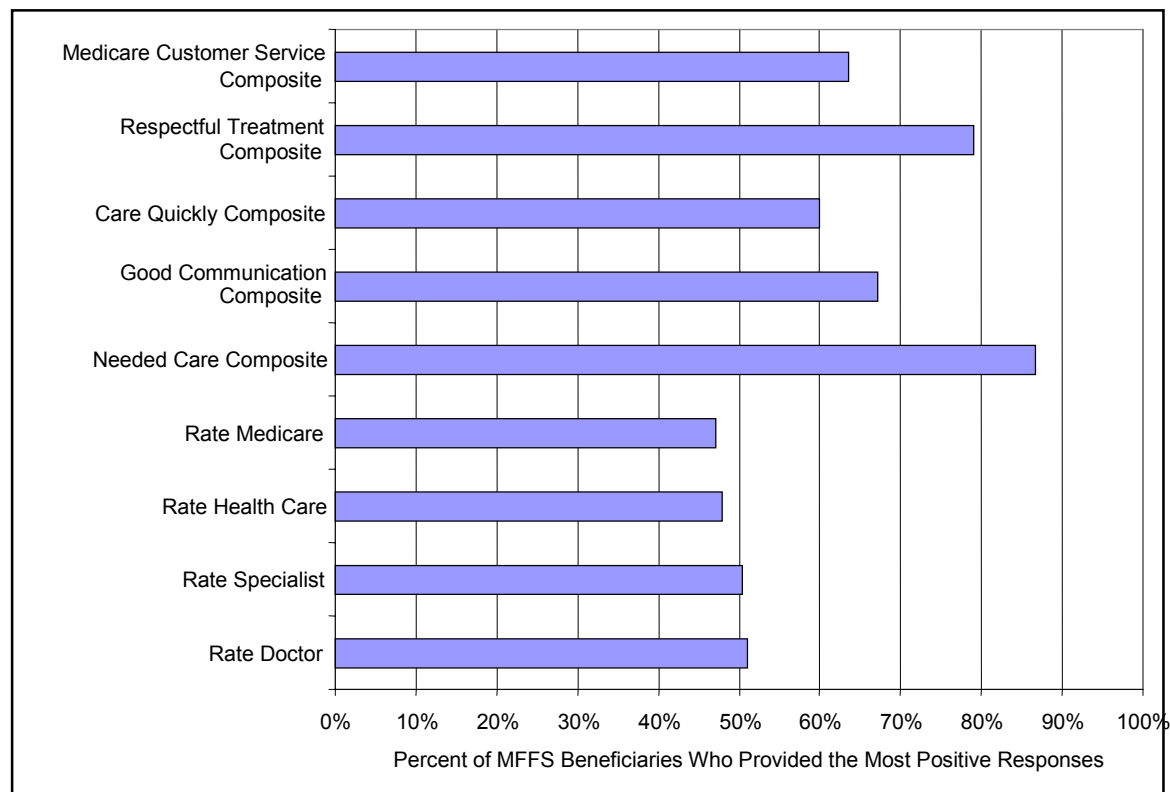
¹ Most positive responses include a rating of 10, or answers of "always" or "not a problem."

Conclusions

Across all aggregation options, when looking at the most positive response options, MFFS beneficiaries seemed to rate their overall Medicare experience (Rate Medicare indicator) lower than any other indicator, and there was substantial variation across geounits for this indicator. Other indicators for which notable differences existed across geographic sampling units, states (including DC and PR), as well as regions were personal doctor ratings (Rate Doctor) and specialist ratings (Rate Specialist). In addition, there were also notable differences for the Medicare Customer Service composite.

When ratings and composites were aggregated to state, region, and national levels, the percentage differences across aggregation levels were still present but mitigated. Although there were some extreme outliers, resulting in striking differences between a few geographic sampling units and states, amalgamation of such generally homogenous units and states into regions did not eliminate valuable differences and may therefore be an appropriate reporting unit.

7.6 Individual-Level Variation in Composites and Ratings by Subgroups of MFFS Beneficiaries

In the previous section, we examined differences among subgroups of Medicare beneficiaries at the individual level to understand differences in health services experience and satisfaction by characteristics of subgroups within the MFFS population. By holding other factors constant in the multivariate analyses and by stratifying according to characteristics that measure access to additional insurance, or illness and frailty, we can better understand subpopulation differences.

This section reports the results of descriptive data analysis, cross-tabulations, and multivariate models. For the first two analyses, we use the nine composites and indicators discussed in the previous chapter, including five of the Medicare Compare web-reported ratings and composite indicators (Rate Health Care, Rate Medicare, Needed Care composite, Good Communication composite, and Care Quickly composite) as the dependent variables. Only those five Medicare Compare web-reported ratings and indicators are examined in the multivariate analyses. The independent variables include demographic, health status, insurance, and region characteristics.

Key Findings

- For all CAHPS performance indicators and ratings except Medicare Customer Service, no more than 20 percent of MFFS beneficiaries responded negatively. In fact, for the Good Communication, Care Quickly, and Respectful Treatment composites, 90 percent or more of beneficiaries responded with 'usually' or 'always.' Approximately one-third of beneficiaries reported having a problem with one or more of the indicators making up the Medicare Customer Service composite.

- Upon categorizing prescription drug coverage separately from additional insurance, it was found that the majority (70 percent) of MFFS beneficiaries had additional insurance, with or without prescription drug coverage, to supplement Medicare. Ten

percent of beneficiaries had no insurance in addition to Medicare, 3 percent denied having additional health care insurance but reported having prescription drug coverage, and 11 percent were dually eligible for Medicare and Medicaid.

More specifically, 47 percent of MFFS respondents had additional insurance, were not dually eligible, and reported having prescription drug coverage; 24 percent had additional insurance, were not dually eligible, and did not report having prescription drug coverage. Only 3 percent of beneficiaries had no insurance in addition to Medicare, were not dually eligible, but reported having prescription drug coverage; 10 percent of those with no additional health care insurance, who were not dually eligible, did not have prescription drug coverage. Missing responses constituted 6 percent of the sample. See *Exhibit 7.10.*

Exhibit 7.10: Percentage Distribution of MFFS Beneficiaries by Insurance Category
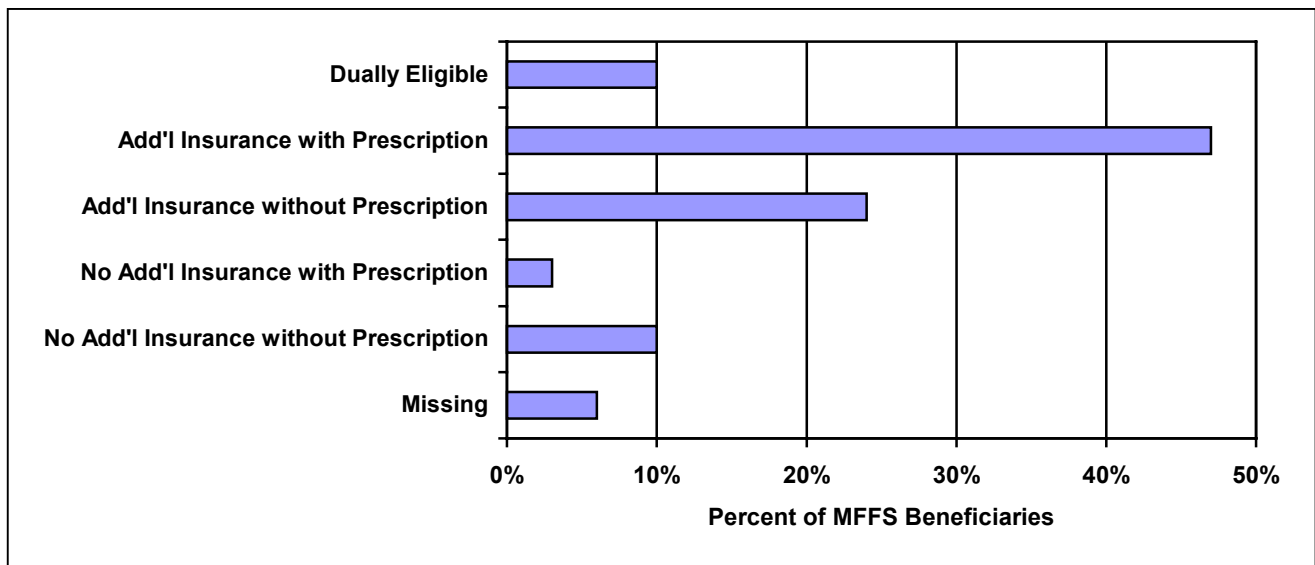
- Based upon simple cross-tabulations of selected dependent and independent variables, there did not seem to be notable differences (i.e., 5 percentage points or greater) across many of the indicators and ratings in regard to managed care penetration, by metropolitan or rural residence or gender.

- There were substantive percentage differences across many of the indicators and ratings for age, education, race, health status, mental health status, insurance status, and availability of a personal doctor.

- Consistent with the bivariate analysis, MFFS beneficiaries of younger age, higher education, in poorer health, and who did not have a personal doctor were generally less satisfied with MFFS than their counterparts.

- While the effects of gender, managed care penetration rates, and residing in metropolitan versus rural areas seemed inconclusive in cross-tabulations, in multivariate analyses male gender and living in rural areas with lower Medicare managed care penetration rates were associated with lower satisfaction.

Conclusions

Findings from our individual-level analyses suggest that socio-demographic characteristics, health status, and insurance type affect satisfaction and experience with MFFS. Younger beneficiaries are less satisfied than older beneficiaries, beneficiaries with lower levels of education rate Medicare higher than the more highly educated, and males rate Medicare lower than females. Healthier beneficiaries were more satisfied and rated Medicare higher than sicker beneficiaries. Beneficiaries with a personal doctor were more satisfied than those without. Beneficiaries living in metropolitan areas reported being less satisfied and rated Medicare lower than those living in rural areas. MMC penetration rates were also associated with satisfaction ratings, with those living in areas with higher MMC penetration reporting higher levels of satisfaction and rating Medicare higher than those living in areas with less than 25 percent managed care penetration.

7.7 MFFS and MMC: Differences in Plan Ratings and Composites

In this section we describe the results of the analysis of the MFFS and MMC comparisons. We examine differences in ratings and composites by plan option (MFFS vs. MMC) and by health status. In the latter analysis, we addressed the question of whether beneficiaries in poor/fair health or excellent/very good health rated their experience with Medicare differently if they were in MFFS or MMC.

We compared MFFS and MMC in 42 states[7] and the District of Columbia on six of the composites or ratings that are reported on the Medicare Compare website. To further ensure consistency with the information presented to Medicare beneficiaries via the website, most comparisons throughout this report and, more specifically, for this section are based on the

extreme response categories. The composites and ratings used in the analyses in this chapter are listed below:

- Rate Health Care* **(Q 30)**
- Rate Medicare* **(Q 46)**
- Needed Care composite* **(Q 4, 9, 21, 22)**
- Good Communication composite* **(Q 26, 27, 28, 29)**
- Care Quickly composite* **(Q 14, 16, 18, 23)**
- Flu Shot indicator* **(Q 79)**

Key Findings

- Generally, a larger proportion of MFFS beneficiaries gave the most positive responses (i.e., "not a problem," "always," or "10") for the Needed Care composite and Rate Medicare, whereas a larger proportion of MMC beneficiaries gave positive responses for the Good Communication composite and the Flu Shot indicator.

- The lowest percentage of flu shots for both MMC beneficiaries (59 percent) and MFFS beneficiaries (57 percent) was in the District of Columbia. In contrast, the highest percentage of "10" ratings for Rate Health Care was among MFFS beneficiaries in DC.

- There were substantive state differences for the proportion of MFFS and MMC beneficiaries rating their Medicare plan (i.e., MFFS/Original Medicare plan or a Medicare managed care plan) a "10." For example, 66 percent of MMC beneficiaries in Iowa rated their health plan a "10" versus 26 percent of MMC beneficiaries in Delaware. Such state variation is illustrated in ***Exhibit 7.11***, with Iowa and Delaware highlighted.

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7 Forty-two states have MMC penetration enabling us to make comparisons between MFFS and MMC
* Indicates composites or ratings featured on the Medicare Compare website (http://www.medicare.gov/mphCompare/home.asp).

Exhibit 7.11: MFFS and MMC Comparisons: Beneficiaries Reporting "10" for Rate Medicare[1]

States	% of MFFS (F)	% of MMC (M)	%MFFS - %MMC	Level of Significance[2]	Percent Reporting a "10"
National	45.8	41.8	4.0	<0.001	M---F
DC	57.8	35.4	22.4	<0.001	M------------------F
Hawaii	57.6	53.5	4.1	.	M--F
Alabama	54.4	48.1	6.3	<0.001	M-----F
Louisiana	54.3	53.6	0.7	.	=
West Virginia	54.0	52.4	1.6	.	M-F
Massachusetts	53.1	46.9	6.2	<0.001	M------F
Rhode Island	52.8	41.2	11.6	<0.001	M---------F
Pennsylvania	51.9	44.5	7.4	<0.001	M-----F
Kentucky	51.5	35.3	16.2	<0.001	M--------------F
Michigan	50.0	42.0	8.0	<0.001	M------F
New Jersey	49.9	30.6	19.3	<0.001	M----------------F
Missouri	49.4	41.8	7.6	<0.001	M------F
Oklahoma	48.3	43.8	4.4	0.009	M--F
Delaware	48.1	25.8	22.2	<0.001	M------------------F
North Dakota	48.1	46.2	1.8	.	M-F
Kansas	48.0	47.8	0.2	.	=
Connecticut	47.7	34.5	13.3	<0.001	M----------F
Tennessee	47.4	45.7	1.7	.	M-F
Iowa	47.2	65.9	-18.7	<0.001	F---------------M
Texas	46.9	47.1	-0.2	.	=
Maryland	46.6	32.8	13.8	<0.001	M---------F
New Hampshire	46.6	43.0	3.6	.	M—F
New York	46.4	38.5	7.9	<0.001	M------F
Ohio	46.1	41.0	5.1	<0.001	M----F
Florida	46.0	37.7	8.3	<0.001	M------F
Maine	45.5	33.7	11.8	<0.001	M---------F
Arkansas	44.9	50.1	-5.2	0.013	F----M
Illinois	44.9	41.1	3.8	<0.001	M-F
Indiana	44.7	44.8	-0.1	.	=
New Mexico	44.2	42.2	2.0	.	M-F
California	43.1	39.7	3.4	<0.001	M---F
Virginia	42.7	36.6	6.1	<0.001	M-----F
Nebraska	42.0	38.5	3.4	.	M---F
North Carolina	41.9	42.3	-0.5	.	=
Georgia	41.8	37.5	4.3	0.002	M---F
Arizona	41.1	36.7	4.3	0.009	M-----F
Minnesota	40.6	45.0	-4.4	0.002	F---M
Wisconsin	39.9	46.9	-7.0	<0.001	F----M
Nevada	39.0	34.7	4.3	0.044	M---F
Idaho	38.7	41.1	-2.4	.	F---M
Washington	38.7	39.8	-1.1	.	F-M
Oregon	37.1	42.8	-5.7	<0.001	F---M
Colorado	33.1	35.7	-2.6	.	F-M

Percent Reporting a "10" scale: 20% | 45% | 70%

F: % of MFFS
M: % of MMC
=: F and M

[1]Sorted by percent of MFFS beneficiaries reporting "10" for Rate Medicare

[2]Significance levels greater than 0.05 are not reported.

7-17

- Neither MFFS nor MMC received consistently higher ratings across all indicators. On the national level, a statistically significant (albeit small), higher percentage of MFFS beneficiaries gave the most positive responses for three of the six indicators, compared with MMC beneficiaries. These include the Needed Care composite, the Care Quickly composite, and Rate Medicare. See *Exhibit 7.12* below.

Exhibit 7.12: National Percentage Estimates of Most Positive Responses[1] by Medicare Plan[2]
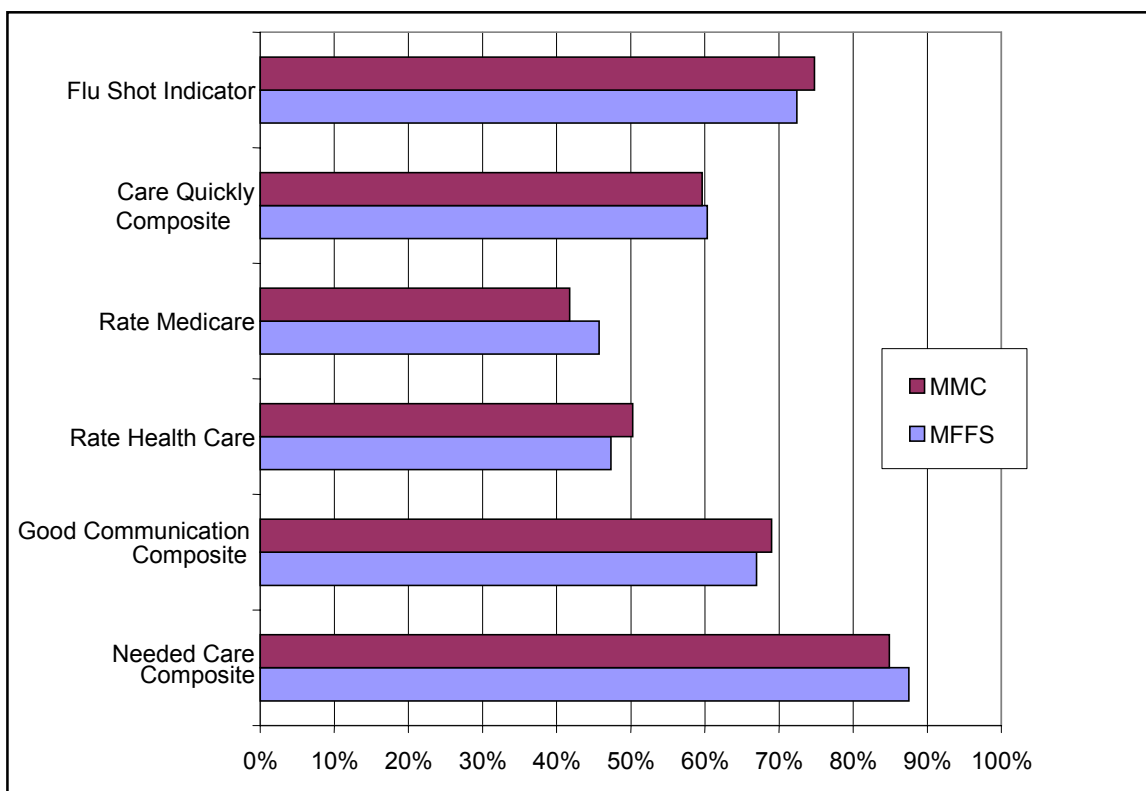
[1] Most positive responses include a rating of 10, or answers of "always" or "not a problem."
[2] All differences between MFFS and MMC are statistically significant at p<0.001.

- Beneficiaries in excellent/very good health perceived their plans and the care they receive differently than those in fair/poor health. Generally, a larger proportion of those who rate their health as excellent/very good gave MMC higher ratings, while a larger proportion of beneficiaries in fair/poor health gave MFFS higher ratings. It should be noted that data presented are based upon self-reported health status rather than health status measured in some other way, such as through clinical definitions, presence of disease, or from claims data.

  Furthermore, among MFFS beneficiaries, 7 percent reported their health as "excellent," 24 percent reported their health as "very good," 35 percent reported their

health as "good," 26 percent reported their health as "fair," and 8 percent reported their health as "poor." Among MMC beneficiaries, 7 percent reported their health as "excellent," 23 percent reported their health as "very good," 38 percent reported their health as "good," 25 percent reported their health as "fair," and 6 percent reported their health as "poor." These results are presented in ***Exhibit 7.13*** below.

Exhibit 7.13: Percentage Distribution of MFFS and MMC Beneficiaries by Self-reported Health Status by Plan Type
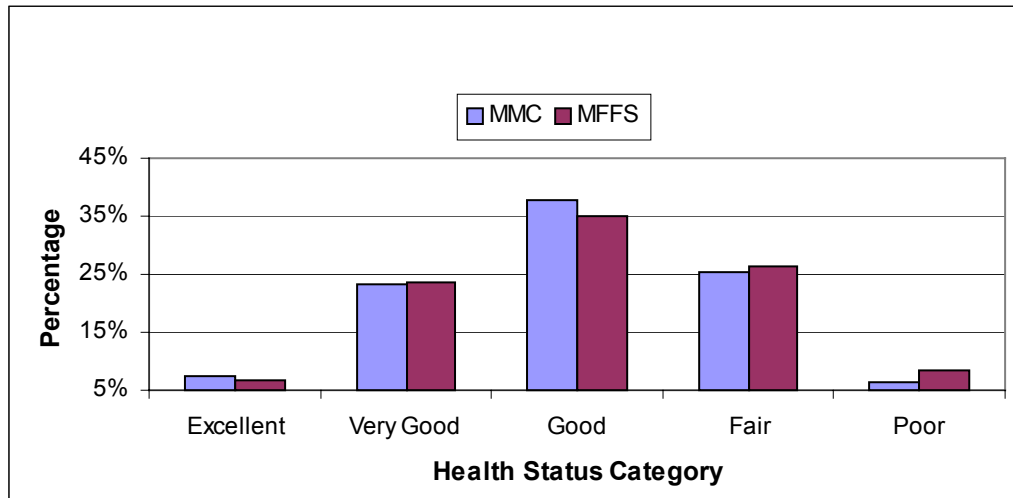
- In 27 states and the District of Columbia, there were significant differences between the percentage of beneficiaries in MFFS and MMC who rated their Medicare health plan a "10" by health status. In all cases, a higher percentage of beneficiaries in MFFS who were in fair/poor health rated Medicare a "10" compared with those in excellent/very good health. Similarly, a higher percentage of MMC enrollees in excellent/very good health rated Medicare a "10" compared with those in fair/poor health. These findings, presented in ***Exhibit 7.14***, illustrate the variability in most positive responses among Medicare beneficiaries across states, Medicare health plans, and health status.

Exhibit 7.14: MFFS and MMC Comparisons: Beneficiaries Reporting "10" for Rate Medicare Differences by Health Status[1]

State	%MFFS - %MMC		Absolute Difference	Level of Significance[2]	MMC Higher ... MFFS Higher
	VGood/Ex (V)	Poor/Fair (P)			-30% ... 0% ... 30%
North Dakota	-9.2	11.8	21.0	0.007	V---------P
Iowa	-27.1	-6.5	20.6	<0.001	V----------P
North Carolina	-10.1	8.5	18.6	<0.001	V--------P
Alabama	-3.6	14.3	18.0	<0.001	V--------P
New Mexico	-5.3	12.5	17.8	<0.001	V--------P
Nevada	-0.8	16.2	17.0	<0.001	V--------P
DC	11.3	27.3	16.0	0.048	V-------P
Rhode Island	1.8	16.9	15.1	0.030	V------P
Idaho	-12.6	2.3	14.9	0.023	V------P
Oklahoma	-6.5	7.7	14.3	<0.001	V------P
Ohio	-3.4	10.7	14.0	<0.001	V------P
Illinois	-3.1	10.0	13.2	<0.001	V------P
Texas	-6.8	5.9	12.8	<0.001	V-----P
California	-4.0	7.9	11.9	<0.001	V-----P
Nebraska	1.5	12.4	10.8	.	V----P
Kansas	-7.6	2.5	10.1	0.012	V----P
New York	2.2	11.7	9.5	<0.001	V----P
Missouri	0.7	10.1	9.4	0.001	V----P
Minnesota	-10.4	-1.4	9.0	0.008	V---P
Arkansas	-12.6	-4.1	8.5	.	V---P
Florida	2.1	10.2	8.2	<0.001	V---P
West Virginia	-4.4	3.4	7.9	.	V---P
Wisconsin	-13.5	-5.8	7.8	0.012	V---P
Oregon	-10.5	-2.9	7.6	0.033	V---P
Arizona	1.8	9.3	7.5	0.039	V---P
Michigan	5.4	13.0	7.5	0.006	V--P
Tennessee	-0.7	6.1	6.8	0.027	V--P
Louisiana	-4.2	2.6	6.8	0.04	V--P
Georgia	-1.2	5.3	6.5	0.034	V--P
Pennsylvania	2.6	9.1	6.5	0.002	V---P
Kentucky	11.1	16.9	5.9	.	V-P
Indiana	-3.1	2.7	5.8	0.032	V--P
Massachusetts	4.2	9.7	5.5	.	V--P
Maine	10.8	5.5	5.3	.	P-V
Hawaii	3.0	-2.3	5.3	.	P--V
Virginia	5.0	9.8	4.9	.	V--P
Delaware	19.6	24.5	4.8	.	V-P
Washington	-2.6	1.5	4.0	.	V-P
New Jersey	16.5	20.5	4.0	.	V-P
Connecticut	11.7	15.6	3.9	.	V-P
Colorado	-3.7	-0.5	3.2	.	V-P
Maryland	13.7	15.3	1.6	.	VP
New Hampshire	1.9	1.8	0.1	.	=

Legend:
V: VGood/Ex Health
P: Poor/Fair Health
=: V and P

[1] Differences between MFFS and MMC beneficiaries reporting a "10" for Rate Medicare are shown by state for those in (self-reported) Very Good/Excellent health (V) and those in Poor/Fair health (P). For Example, in North Dakota beneficiaries in Very Good/Excellent health rated MMC 9.2% higher than MFFS. In contrast, these in Poor/Fair health rated MFFS 11.8% higher than MMC. In Iowa, beneficiaries rated MMC higher than MFFS regardless of health status. However, the difference between MMC and MFFS was significantly smaller for those in Poor/Fair health.

[2] Significance levels greater then 0.05 are not reported.

Conclusions

Among the states (and the District of Columbia) included in this analysis, higher percentages of positive responses were given by MMC beneficiaries than MFFS beneficiaries for two of the six indicators, including the Good Communication composite and Flu Shot indicator. For two of the indicators, Care Quickly and Rate Health Care, neither group had a notably higher percentage of positive responses. Generally, MFFS beneficiaries gave a higher percentage of positive responses for the Needed Care composite and Rate Medicare than did their MMC counterparts. These findings suggest that MFFS beneficiaries are more satisfied with Medicare and health services access in general, while MMC beneficiaries are more satisfied with their health provider interaction and may receive more preventive measures. These data can be used to examine state-level trends and initiatives that can influence beneficiaries' experience with and perceptions of their choice of health plan.

Our analysis of the five composites and ratings, along with the flu shot indicator, illustrate statistically significant differences in the satisfaction and experience reported by beneficiaries in MFFS and MMC. In general, a higher percentage of beneficiaries in MFFS (compared to MMC enrollees) reported "not a problem" for the Needed Care composite and reported "10" for Rate Medicare. On the other hand, a higher percentage of beneficiaries in MMC (compared to those in MFFS) reported "always" for the Good Communication composite, reported "yes" for the Flu Shot indicator, and assigned a "10" for Rate Health Care. For one composite, Care Quickly, neither MFFS nor MMC was clearly better or worse. More specifically, a higher percentage of MFFS beneficiaries reported "always" for the Care Quickly composite in seven states and the District of Columbia, while a higher percentage of MMC enrollees said that they "always" get care quickly in nine states.

Findings from our analysis comparing MFFS with MMC by health status suggest that beneficiaries who are in fair/poor health and those in excellent/very good health perceive their plans differently. In general, beneficiaries in fair/poor health reported better experiences and higher levels of satisfaction with MFFS than with MMC. On the other hand, beneficiaries in excellent/very good health rated MMC higher than MFFS most of the time.

A significantly greater proportion of MFFS beneficiaries in fair/poor health reported "not a problem" for the Needed Care composite, assigned a "10" for Rate Medicare, and responded

"always" for the Care Quickly composite compared with those in MMC. Conversely, a significantly greater proportion of MMC enrollees in fair/poor health reported "always" for the Good Communication composite and "yes" for the Flu Shot indicator compared with beneficiaries in MFFS. Among beneficiaries in excellent/very good health, a significantly greater proportion of MMC enrollees reported "always" for the Good Communication composite, assigned ratings of "10" for Rate Health Care and Rate Medicare, and responded "yes" for the Flu Shot indicator compared with beneficiaries in MFFS. Conversely, a greater proportion of MFFS beneficiaries in excellent/very good health were more likely to report "not a problem" for the Needed Care composite compared with those in MMC.

8. Encouraging PROs to Use CAHPS Data for Quality Improvement

8.1 Purpose and Objectives of the Task

This task was intended to gain a better understanding of how CAHPS was viewed and understood by the Peer Review Organizations (PROs), and then to develop an approach for encouraging and enabling them to use CAHPS data in their Quality Improvement (QI) projects. The plan called for RTI to conduct focus groups with PRO staff to gather this information at one or more of the meetings of the American Health Quality Association (AHQA), the professional association of the PROs. In addition, the plan was to include a model for the development of sample QI projects the PROs might use CAHPS data to perform in their respective states. The model projects would illustrate how to use CAHPS data to identify potential problems. It would suggest that potential problem areas could be identified through a variety of comparative analyses—e.g., by finding differences in the CAHPS service quality scores between population groups. The models would also provide direction in the development of interventions to address disparities found in the analysis. Subsequent CAHPS surveys would be identified as mechanisms for evaluating the impact of any QI interventions that may be implemented. This model and the sample QI projects were to be presented to the PROs through professional meetings or workshops.

At the November 30, 2000 Technical Expert Panel (TEP) meeting held in Baltimore, this plan was presented and TEP members provided their perspective. By that time, TEP members had already been briefed at the previous year's AHQA annual meeting on the results of focus groups on a similar topic conducted by the Picker Institute with PRO staff. The report on the results of the focus group suggested that while knowledge of and experience with CAHPS data were not very high among PRO staff, there was no great interest in becoming more familiar with the data in the context of QI.

In the discussion surrounding this task plan presentation at the TEP meeting, two new possible directions emerged. One was a suggestion to see how health plans are using CAHPS data for QI purposes and to assess whether there are possible parallels for PROs. The second suggestion was to make an effort to tie CAHPS data in some way to clinical or preventive care, either the use of or outcomes from.

8.2   Quality Improvement Activities Using CAHPS

This section summarizes the results of task activities seeking to identify uses of CAHPS data for quality improvement (QI) purposes within health plans, with a focus on uses of CAHPS data that could be transformed into QI activities appropriate for PROs. To identify plans using CAHPS data for QI purposes, we reviewed the 1999 project summaries of the 39 organizations with a summary posted on the CAHPS Users Group website (http://www.cahps-sun.org/).

Users included a few PROs, but mostly health plans. The PROs typically reported using CAHPS to inform beneficiaries of how plans performed. On the other hand, the health plans generally indicated that CAHPS was performed in order to obtain accreditation, and for promotional reasons. Three health plans did mention using CAHPS specifically for QI purposes. We contacted and interviewed representatives of those three health plans:

- Blue Cross Blue Shield of North Carolina
  Ms. Cindy Brenneman, R.N.
  Director, Quality Management

- Anthem Blue Cross Blue Shield of Maine
  Mr. David Langley
  Director, Strategic Research and Analysis

- Blue Cross Blue Shield of Massachusetts
  Ms. Diane Field
  Senior Market Research Consultant

These interviews revealed that CAHPS data were being used by health plans along with other information to identify areas needing improvement *within* the health plans. Most typically, however, health plan attention was directed at improving their ratings in order to raise their accreditation score. In addition, other surveys were often conducted with "CAHPS-like" items in order to get closer to identifying operational problems within practices (e.g., problems getting referrals) and in service-related areas of the plan (e.g., claims processing). The general feeling was that the CAHPS items identified problem areas but were "too high level" to actually identify the root of the problem.

There does not seem to be enough parallels at present between private health plan and PRO use of CAHPS data to support quality improvement to take this line of inquiry much further.

8.3   Potential Relevance of CAHPS Data to Clinical and Preventive Care

We have undertaken to examine whether variations in some of the CAHPS service quality variables are significantly related to variations in clinical preventive health behaviors. In particular, we have begun to explore the extent to which the communication skills of primary care physicians and the helpfulness and respectfulness of their office staff are associated with better compliance with selected preventive care directives. Thus far, we have examined the association of the CAHPS composite scores for these two quality measures and the use of screening mammography. This analysis was done at the geounit level (counties and county aggregates) used to sample for the Medicare CAHPS.

Among the preventive health behaviors we will focus on next are some included in the CAHPS survey (flu shot, pneumonia immunization, and smoking cessation counseling), and others from Medicare claims, treatment of depression, and diabetes care). The objective is to establish whether service quality data collected in the CAHPS survey are associated with the use and receipt of preventive services at the individual (person) level as opposed to at the geounit (ecological) level.

8.4   CAHPS Service Quality Measures and the Use of Screening Mammography

Purpose and Background

The literature in health communications has often reported that health care providers who communicate well with their patients can expect to obtain better compliance. Further, medical students are trained in the importance of good communication skills to being a good physician. As patient compliance is a component of achieving good quality preventive care, and to the extent that physicians can influence their patients through effective communications, it can be a part of a PRO's QI activities to promote better communications.

A recent Academy for Health Services Research presentation by the Harvard School of Public Health group headed by Paul Cleary reported that managed care consumers' assessments of their primary care providers' ability and willingness to communicate were associated with the health plan's HEDIS (Health Plan Employer Data and Information Set) rate of mammography utilization. This analysis is an attempt to replicate those results in a different medical care delivery environment. Whereas the units of analysis in the Harvard managed care research were

health plans, in our FFS research the units of analysis are the geographic areas (counties and groups of counties).

Hypotheses

We propose to examine the relationship between beneficiaries' reported (1) perception of the quality of their primary health care provider's communication skill, (2) level of respect and helpfulness received from the provider's office staff, and (3) use of screening mammography. We expect the following:

- Good reported medical care provider/patient communication should encourage better compliance with treatment and prevention regimens and be associated with higher rates of mammography use.

- Supportive medical office staff should facilitate patient compliance with treatment and prevention regimens and should be associated with higher rates of screening mammography use.

Methods

Units of Analysis. The analysis units for this particular investigation are the 275 counties and county groups used for selection of the national sample of beneficiaries included in the 2000 MFFS.

Sources and Definitions of the Variables. There were two measures of service quality calculated from the responses to six items in the 2000 MFFS questionnaire. The composite measure of health care provider communication skill consists of the mean of the sum of the response scores assigned to each of four dimensions of communication related to the primary care provider. The composite measure of staff helpfulness consists of the mean of the sum of the response scores assigned to each of two dimensions related to staff in the primary care provider's office.

The rates of mammography use for the same 275 geounits were obtained from a report prepared for CMS/HCFA by Health Economics Research (HER) entitled *Performance Measurement in Medicare Fee-for-Service: Biennial Mammography Screening Rates for 1998-1999.* The mammography use rates from the HER report were calculated using Medicare FFS

claims for mammograms reported during the two year period of 1998 and 1999, but only for women with Medicare between the ages of 52 and 69 years to parallel the HEDIS calculations.

In addition to these variables, a number of others could confound our analysis of the relationship between service quality and mammography use. Among those that are not individual characteristics are differences in health resources, regional medical practice pattern differences, and urban and rural cultural and geographic differences. We obtained the data to calculate these measures from the 1999 Area Resource File.

Because health maintenance organizations (HMOs) have a reputation for providing more preventive services, we expected there would be a spillover effect into the Medicare FFS sector in areas of high Medicare HMO penetration. We computed an HMO penetration variable from the Medicare EDB as the proportion of Medicare beneficiaries enrolled in a Medicare managed care plan in the geographical area. In addition, there were some individual-level variables that could be aggregated from the CAHPS data to characterize the geographic area. Among those were length of beneficiaries' association with their primary care physician since joining Medicare and frequency of visits to their physician.

Analysis Plan and Statistical Techniques. The measure we employed as our variable for the Medicare beneficiary mammography use rate in the geographic area was compiled by HER. It was only reported separately by race/ethnic group, Medicaid status, or age group (52-64 and 65-69 years of age). Because the CAHPS sample fell below 20 CAHPS respondents in a geographic area when split across 275 geographic areas, we were restricted to analyzing the entire group of women 52-69, only White women 52-69, and all women 65-69 years of age. Only for these groups did we expect stable mean and proportion estimates for all of the geographic areas.

We analyzed the relationships between service quality and mammography use, employing the SAS multiple linear regression procedure with a dichotomous value for each level of the categorical variables. Before running regression models, we produced a correlation matrix of all of the variables and examined it for variables that were obviously highly correlated. Because there were some reasonably high correlations in the matrix, we also ran the SAS multi-collinearity diagnostics with the model to test whether it was present in our data. There was no evidence of multi-collinearity.

Results

In the first model to predict the rate of screening mammography use among 52- to 69-year-old Medicare beneficiaries in the 275 geographic areas, we employed the mean Physician Communication and Office Staff Helpfulness scores calculated using the CAHPS Macro. The overall model analysis of variance is highly significant (F-Value = 8.40, DF 17/256, $p<0.0001$), with an adjusted $R^2 = 0.31$. The model accounts for nearly one-third of the variance in the geographic area rates of mammography use.

This model indicates significant differences in mammography rates across the census divisions, with the rate in New England significantly higher than elsewhere. The only other significant variable in the model is the variable indicating how long the average female CAHPS respondent 52 to 69 years old had been with their current physician since joining Medicare. It suggests that the longer the mean length of time Medicare beneficiaries in an area have been seeing the same doctor, the higher the rate of mammography in the area.

We tested a very similar second model, replacing the two CAHPS measures with related but differently calculated measures. Rather than being based on the CAHPS Macro-derived scores, we created measures that indicated what proportion of respondents in the area assigned their providers only the highest possible scores. Our objective in creating the new variable was to increase the variability in the CAHPS-based service quality measures and perhaps thereby increase their contribution to the model. The overall model analysis of variance is again highly significant (F-Value = 9.23, DF 17/257, $p<0.0001$), with an adjusted $R^2 = 0.34$. The model accounts for over one-third of the variance in the geographic area rates of mammography use.

As with the first model, all of the census divisions differ significantly in their rates of mammography use from New England, which has the highest. Also significant in the model is the number of years with the current physician since joining Medicare; i.e., the longer with the same physician, the higher the rate.

Two other variables that were not significant in the first model were in the second. The mean number of screening mammography facilities in the county is significant. That the sign on the coefficient is negative, suggesting that the fewer the facilities the higher the rate, is counter to our expectations. One of the two CAHPS service quality measures is significant in the model as well. The Office Staff measure did not reach significance but the Physician Communication

measure did. We cannot explain at this time why the coefficient is negative, suggesting that the lower scoring areas have higher mammography use rates.

We repeated the estimation of both models for the two population subgroups for which we had mammography use rates (all White women, and all women 65 to 69). The subgroup models were also all significant and the R^2s ranged from 0.24 to 0.38. Results were largely consistent with the models for the overall group, with region and mean years with current physician since joining Medicare significant throughout. The Practice Staff Helpfulness score never reached significance, and measures of urban environment, number of mammography facilities, and physician communication score were inconsistent in their significance. Some of these were also inconsistent with respect to the expected direction of their association.

Discussion

The model we have estimated appears to successfully explain considerable variance in the rates of mammography use at the county or county group level at which the MFFS CAHPS data were collected. The R^2 ranged from 0.24 to 0.38 and was highly significant in all cases. Clearly, census division was the most consistently significant variable and likely accounts for most of the differences in rates that the model explains. Only one of the two CAHPS-derived service quality measures—physician communication—was associated with the mammography rate, but it was only significant in half of the models.

Conclusions

Our analyses thus far are not conclusive with respect to the association of CAHPS service quality measures and the use of clinical services at the geounit level. We propose to conduct further analysis in which we obtain individual-level outcomes to analyze with individual-level CAHPS scores rather than the geographic area measures we examined in this analysis.

8.5   Plan For Continued Analysis

The purpose of our continuing analysis is to examine whether the two selected dimensions of service quality as reported by respondents to the MFFS CAHPS are associated with reported performance of specific preventive health behaviors. In particular, we will explore whether there is a direct association between reported physician communication and office staff helpfulness and reported use of the selected preventive services included in the CAHPS survey.

Specifically, RTI will investigate whether these CAHPS items are associated with the self-reported receipt of (1) influenza immunization during the previous flu season, (2) inoculation against pneumonia ever, and (3) smoking cessation counseling for smokers. Examining this relationship will require computing person-level measures analogous to the geographic area-level composites computed by the CAHPS Macros. Fortunately, this can be readily done as all respondents who reported a doctor's visit in the past 6 months were asked the entire set of items used to calculate the composite score for the two indices, and the response rates for these items were very high.

The second step of the research would involve linking the women in the MFFS sample to their Medicare claims and identifying those who had a claim for mammography. Claims for mammography would be identified by ICD or CPT procedure codes. This step would benefit from using the most recent two-year period (even though mammography is a service covered by Medicare on an annual basis) and including the full age range of women in the MFFS sample. There is no reason to restrict the range to those included in the HEDIS calculations (52 to 69 years of age) that formed the basis of the HER mammography rate data calculated for the 275 geographic areas in the FFS survey.

The third step in the analysis involves linking the reported communication skill of providers and helpfulness of office staff to whether providers and staff who are reported to be good communicators and helpful to patients identify and more effectively treat chronic health care problems. We will focus on two chronic conditions about which there is agreement that collateral morbidity can be minimized or prevented altogether by appropriate diagnosis and early/regular intervention. We have tentatively selected depression and diabetes as our test conditions/diagnoses. This would require identifying MFFS survey respondents who are depressed or diabetic.

The identification of persons who show signs of depression can be done from within the CAHPS MFFS survey data using the depression items in the survey. However, because there are no items or questions in CAHPS asking about diabetes we would need to use prior Medicare claims to identify a group of CAHPS respondents who are diabetic. This should be possible using the diagnosis coded on the Medicare claim and tracking special diabetes services, supplies, and procedures covered by Medicare. We will then link these CAHPS respondents to Medicare

claims that identify services used by these persons for the treatment of depression or diabetes, or for complications of these conditions that typically result from failure to effectively intervene early and regularly. We would examine the association between the respondents' reported assessment of their providers' communication skills and the perceived helpfulness of office staff and their receipt of services—volume, type, and cost.

The final step in the process will be to prepare a manuscript that reports on the results of the analysis and indicates the extent to which the CAHPS data have a clinical tie to measures of self-reported service quality. It is expected that the PROs will be able to use these results to identify possible quality issues that could be addressed by interventions directed at improving service quality in private FFS practices that serve Medicare beneficiaries.

9. References

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Appendix A.
MFFS Survey Questionnaire